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Decorative Suggestions from Natural Forms.

THE part played by natural vegetation in architectural ornament is very obvious in some of the best-known and most prominent features in past styles of architecture. The water-lily leaf in the Egyptian capital, the acanthus in the Greek capital, are specimens of architectural decorations in which the natural form on which the decorative treatment is founded is perfectly recognisable, and in the case of the Egyptian example is, indeed, hardly conventionalised, except in regard to its orderly and symmetrical arrangement around the capital. The Greek acanthus is conventionalised a good deal more than this; it is, to begin with, a more irregular and broken leaf in its natural form than the otus, and had to be reduced to a conventional irregularity of form to adapt it to the spirit of Greek ornament; and as it was not used in flat incised treatment, like that of Egyptian work, but in relief, it was necessary to impart to it a comparatively solid and heavy appearance, and to get rid of its thin edges and sharp points, in order to give it sufficient weight and mass to harmonise with the architecture amid which it was placed, as well as to have some appearance of giving, at least, partial support to the angles of the abacus under which it curled. Thus the transition from nature is, after all, pretty well marked, and those who had been shown merely an acanthus-leaf in a state of nature, and told that this was elaborated into the decoration of a capital by the Greeks, would probably by no means expect to find a piece of carving so decidedly removed from imitation of nature as the Corinthian capital unquestionably is.

Other ornament in connexion with Greek architecture is even more decidedly removed from nature than this, though it may be observed that when Greek ornament is founded on natural forms the principle of the growth of nature is almost invariably retained and correctly expressed. Greek floral ornament is developed from a leading idea; it is not merely form applied thoughtlessly and illogically. Roman floral ornament has a character and often a sumptuous effect peculiar to itself; it is still further from nature than Greek ornament, as it not only does not imitate the character of nature, but it frequently ignores altogether even the principles of nature in regard to growth and development of design; it shows us large thick masses of foliage of a somewhat heavy cauliflower type, which do not grow upon any recognisable principle, but seem to be applied in unwieldy twists and spiral bunches, mainly with the view of producing an effect on the spectator by mere massiveness and richness, and by highly-elaborated surface carving. This remark does not apply so much, of course, to the Roman capital, but then the merits of that are chiefly due to the Greeks.

Romanesque carving is oddly mingled of purely naturalistic attempts to represent foliage and small animals in as real a manner as the carver's skill allowed, and of purely abstract ornaments, looking often like classical reminiscences more or less coarsely carried out. When we arrive at the earlier complete Gothic, in this country especially, we then, for the first time, find an application of nature to ornament which is carried out on the same principles as Greek ornament, and with often nearly equal excellence, though in a very different style of execution. In the later Gothic style we find more realistic imitation of nature than we have noticed in any leading architectural style previously, and also a greater variety of vegetation introduced, especially in some exceptional cases, such as that of the chapter-house at Southwell, on which we were commenting the other day. But in general, even at this freer period of Gothic ornament, we find that prevalent types are very much repeated in the floral ornament, and only a comparatively few of Nature's types, and those among the most common and easily accessible, are pressed into use by the Mediæval carvers.

We have named the leading styles of the world, and if we look at subsidiary architectural styles we do not find any larger use of natural types of ornament, but rather less. The Arabic and most of the Oriental styles, it is needless to say, are almost entirely abstract in their architectural ornament. In Indian work it is only in worked ornament that some suggestion of Nature's comes in, and sometimes even direct imitation of nature; but that, as far as we have observed, is but seldom. When the Renaissance gave a new direction to architecture in Europe, ornament went even further from nature than ever. It developed into something founded on Roman ornament, which itself had been founded on Greek, and the reference to nature, even in the case of forms and designs which pretended to imitate nature, became thus very distant indeed, and seemed all the more so from the curious way in which the quasi-natural forms were blended with or ran into all kinds of imitations of artificial objects or unnatural chimeras. Yet one merit must be conceded to the Renaissance ornament, in which it was superior to the Roman; its foliage, however far-fetched and artificial, has a clearly-marked principle of growth and development from a root or a centre, according to the principles of natural growth, and in this respect it is more allied to Greek than to Roman taste in ornamental design, and approaches Greek ornament also in the beauty and decision of its curves. Its types, however, are even fewer than in Classic ornament, and much fewer than in Gothic; the Renaissance designer only recognising one kind of leaf and one kind of growth, combined and massed in various ways, certainly, but always the same kind of vegetation, an artificial scroll, half leaf, half stalk, derived from the Roman acanthus, reduced to more slender proportions, and employed on more definite and carefully-constructed lines.

In modern Gothic work considerable attempts have been made to introduce a greater variety of natural vegetation into architectural ornaments, and many churches have been decorated with capitals carved from knots of flowers and ferns and other vegetation, brought together for the purpose, and in some cases that we know of carved from Nature's models, placed before the eye while the work was in progress. And it is creditable to the profession of architectural carvers that in some cases this trouble has been taken not at the bidding or suggestion of the architect, but spontaneously, and from pure love of the work.

It must be observed, however, that merely carving flowers and vegetation from models is not designing ornament, and that something more of thought, more of adaptation of the form to the circumstances and the material, must be displayed to justify the claim of the work to be called ornamental design. This is what we do find to perfection in Greek and in early Gothic ornament; it is not the mere imitation of nature, but the application of natural form, retaining much of its original characteristics, to the production of ornament in a style suited to the peculiarities of the material in which it is executed, and the final form of which is the result of considerable thought, not of the mere cleverness of the hand and eye in realistic reproduction. But it is remarkable how few natural types seem to have been used in the production of ornament of this thoughtful class, and how little attempt there has been to evolve any new ones in the same class of ornament. We have gone on reproducing the Corinthian capital over and over *ad infinitum*, without it having apparently even occurred to any one that the same general form would be susceptible of varied treatment by using other leaves instead of the beautiful but well-worn acanthus, and that this variation might even be carried out in the same building with good effect, preserving the general aspect of the capitals alike, and varying the details. In the case of that beautiful production the carved Early English capital, again, we have been content to go on copying and reproducing it (very seldom with anything like the success of the Mediæval inventors), with no attempt to apply the same free yet conventional treatment, so admirably suited for execution in stone, to any other derivation from

vegetable form. It may, we confess, be doubted whether the Early English lobed foliage is adapted from any precise form in the vegetable world; whether it is not, in fact, evolved from a reminiscence of the volute of the Classic capital, which took this lobed form in the Romanesque French capitals, while still retaining its original angle position as in the Classic capital, but which the later carvers, in England more especially, adopted as the prevalent feature in the carving of a capital, introducing it with the same freedom and absence of order as if it had been a natural growth. The feature is so complete in itself, and so individual in character, that it seems difficult to touch it without spoiling it, and perhaps any effort to adapt the Early English capital with another form of detail could hardly be successful. But other forms of Gothic capital might be reproduced with foliage different from that which was used as their model by the Mediæval carvers. And if the characteristic distinction of the Classic and Gothic type of capital be kept in mind, there is no reason why the same type of vegetation might not be equally suggestive for either type of capital (or of ornament generally), and be used with totally different expression in the Classic or the Gothic manner. The radical distinction, it must be remembered, between Classic and Gothic floral ornament is that the former is geometrically and symmetrically arranged; the latter is free, and, for the most part, unsymmetrical, and imitates the irregular growth of nature even when, as in the Early English capital, it does not absolutely imitate nature in detail. This difference between symmetrical and unsymmetrical in the relation between ornament and nature is conveniently expressed in the terms "Classic" and "Gothic," the signification of which, in relation to such a point, every one readily understands; but, in reality, the distinction is a much more typical one, since the whole of ornament which is based on natural foliage may be divided into these two great classes,—that which is irregular and more or less naturalistic, of which Gothic work shows the best types, and that which, in adapting natural forms, compels them to assume an artificial and bi-lateral symmetry, and results in the type of ornament which we call Classic, and of which Greek ornament furnishes the highest and most perfect examples.

Now, considering that we have always these two essentially different methods of treating a *motif* in ornament, and that behind these we have the almost infinite variety of nature to furnish us with types and suggestions, each of which may be treated not only in one or other of these two leading methods, but may be also susceptible of several sub-variations in character arising out of the different nature and requirements of different materials, it seems strange that there has been so little effort, if not to evolve new forms of ornament, at least to give new character and treatment to old forms by taking fresh suggestions from nature. Of course all the varieties of natural form are not sufficiently marked and individualised to afford each a separate type of ornament: a good deal of similarity of character runs through many species of *flora* when taken in detail, and when taken as a whole a plant or a tree is commonly a subject for the painter rather than for the ornamentist. But even admitting this limitation, there is a variety of form in the *flora* of this country alone which is eminently suitable and suggestive for ornament, and which has never been used; and a far wider range is given if we include among our suggestive types those which are to be found in the vegetation proper to other climates, and which have scarcely been applied at all in architectural and ornamental design. Considering how frequent is the complaint of want of novelty in architectural ornament especially, and deficiency in marked character, it would seem worth while to try if new hints may not be taken from nature by way of furnishing the basis for more variety of treatment in the ornamental detail of architecture, or in ornamental work which is accessory to architecture. We propose, by way of giving these remarks a practical turn, to give sketches of some bits of natural detail such as seem specially suitable and suggestive for this purpose, and such as have been little if at all previously used in architectural detail. In doing so, we shall endeavour to draw somewhat upon exotic types of foliage, not only because these are novel in their application to this purpose, but also because there are to be found among these a good many forms peculiarly suitable thereto; forms which are more precise in their design, and more bold and free in line, than are generally to be found among the natural productions of our own temperate zone, where nature seems to work in a quieter and less exuberant style than under a tropical sun. To the sketches of nature's detail we will take leave to append, always in a spirit of modest and tentative suggestion, one or two examples of the manner in which these may be applied in the formation of architectural detail, or of ornamental detail in one of the forms which may be regarded as subservient to architectural design. The application of mere natural types to one or two different materials may also furnish opportunity for illustrating some ideas as to the manner in which ornament should be affected by the nature of the material in which it is executed, and which often in itself may almost necessarily suggest considerable varieties of treatment and of design, founded on the same initial form. The specimens of natural detail which we may be able to give will perhaps be of interest to some who have not time to collect such "cribs" from nature themselves, and if our suggestions in treating them do not meet with the approval of all, they may at least afford hints on which the taste and fancy of others may exercise themselves further.

The example we offer in this number is from a tropical shrub of very characteristic formation. The leaves have the appearance, at a little distance, of being cut short off; but in reality, as will be seen from the full-sized sketch of the end of the leaf, they are very carefully and delicately modelled. The section of the leaf is like that of a ridge-and-furrow roof. This section, with its edges and depressions, gives a great many fine lines of light and shadow, and this, as well as the flat character of the leaf and the fine and delicate curve of its lines, seem to point it out as very suitable for treatment in rather flat carved work in such a material as marble, in which the delicate curves and sharp edges can be rendered with precision. It is accordingly here adapted to a carved capital supposed to be in that material, the general form being borrowed from a semi-Byzantine form of Romanesque capital found in early French work. It may be observed that the specific epithet, *Licuala horrida*, is not to be taken as implying anything "horrid," but simply means, in the original signification of the Latin adjective, "prickly" or "thorny," referring to the stem of the plant.

Such a design as is here given might be rendered more effective in execution by picking out the lines of the leaves with gilding, either on the margin, or (better, perhaps) applied to one bevel of each ridge, leaving the alternate bevels plain.

THE BOARD OF TRADE AND THE RAILWAYS.

The circular letter of the 20th of September to the railway companies, signed by Mr. Calcraft on behalf of the Board of Trade, betrays a certain amount of tension in the relation between the administration and the managers of the various lines. It may be held to show something further, namely, the conviction entertained by the Board of Trade of their own powerlessness to exert any efficient control in the existing state of the law. Little as it is consistent with the dignity, or we might even say the utility, of a Government department to reiterate, year by year, in its official reports, that complaint of the inadequacy of the returns laid before them, which was a stereotyped feature of the reports of Sir Henry Tyler, and which has been repeated by Messrs. Calcraft & Giffen in their latest annual report, the public may be thought to have become used to it. "The companies will not furnish a word more of information than is contained in the forms authorised by Parliament," it might be said. "Some of them, as, for example, the London and North-Western, will not even do this. It is of no use to make any complaints; without new legislation the companies will defy the Board of Trade. And new legislation will not depend on the real requirements of the case, but on political or class interest conditions." So, on the principle of not crying over spilt milk, the public has left the companies masters of the field.

The alarm generally occasioned by the sudden outburst of a new crop of railway accidents seems to have inspired the Board of Trade with the idea that their hands are, at all events, morally strengthened. They have put categorical questions to the companies, the replies to which would, no doubt, be matter of public interest. And they have done this, pointedly and firmly, without having any power to enforce a reply. If the companies choose to ignore the questions, or to say that they are not bound to furnish the replies, the Board of Trade can do nothing but say that, in that case, they must go to Parliament to ask for further power. That this will be the upshot of the contention is, we think, most probable. Supposing the companies to furnish the Board of Trade, as now requested, with an alphabetical return of all the stations on their lines, showing whether the points and signals at those stations are, or are not, interlocked with one another, such returns can have no practical utility except as furnishing a basis for further requirements on the part of the Board of Trade. The general condition of the lines in this respect is well known. In 1876, on the English lines, 69 per cent. of the mileage was worked with interlocking points and signals, and the same percentage of railway was worked on the block system. In Scotland the proportions were 49 and 52 per cent.; in Ireland, 25 and 2 per cent.; and in the United Kingdom 64 and 57 per cent., respectively. By the end of 1878 the proportions had risen to 77 per cent. of interlocking, and 75 per cent. of blocking, in England, and 71 and 63 per cent. in the United Kingdom. The desideratum, therefore, for the Board of Trade is not so much to ascertain the exact localities of that quarter of the average length of the English lines on which these precautions are not yet taken, as it is to see how they can ensure the dealing with these exceptional cases in the mode which prudence points out to be desirable. The Brighton, the Chatham and Dover, and the Metropolitan District railways were the only three great lines on which, in 1878, the absolute block system was universally adopted. The Metropolitan was the only line on which every point and signal was interlocked.

With regard to the reports of Colonel Yolland, of which "the Board of Trade feel it their duty to emphasise the conclusions," they are on many points so fully and minutely in accordance with our own remarks at the time of the occurrence of the accidents, that the only point left in doubt is, how far the recommendations made in our columns have been directly utilised for the public service, or how far different professional men, impartially studying the same facts without any mutual exchange of ideas, have arrived at identically the same conclusions. Which be the case matters but little, but the fact of the accord is one of good omen.

Colonel Yolland has ascertained that on several occasions the North British Railway Company has felt it necessary to complain of the great speed at which some of the North-Eastern Company's trains were run over their line between Edinburgh and Berwick. It appears, however, to the inspector that it is the state of the line which renders the rate of running unsafe. In pointing out those wholly elementary precautions, which were neglected by the North British Company during the operation of repairing their line near Berwick (which neglect, together with the failure to reduce the speed of the trains over the unfinished portion of the line, caused the accident), it is dismaying to find the Government inspector stooping so near the ground as to attach great blame to "the forgman of the platelayers." Is there no engineer to the line? If so, what has the Government inspector to do, directly, with his subordinates? The fact that a Royal Engineer officer, familiar as he must be with the rules of hierarchical subordination, has in such a case to express an opinion as to the conduct of an ordinary workman, seems to betoken a marvellous absence of anything like systematic organisation of the service of the line.

With regard to the Wennington disaster, again we find "the act of the foreman and gang of platelayers" blamed as contributing to the occurrence. The want of cant in the rails, and the absence of a check rail, to which we before called attention, are also mentioned as contributing to the ease with which the engine left the rails. But the public cannot deal with foremen and gangs of platelayers. The public has a right to expect, and does expect, that there shall be, on every railway, an engineering officer of adequate standing directly responsible for the state of the line, for the state of the rolling plant,

and for the relation between the good order of these two integral parts of the great compound machine, and the speed at which it is driven. It is with such an engineer that the Government inspector alone ought to have to reckon. It is the engineer who should be primarily responsible, in the face of the world. And if any of those employed under him, in any grade, have disobeyed his orders, and thus incurred danger or wrought damage, it is for the engineer, in self-justification, to prove the fact, and to ask that the due penalty should be inflicted in the right quarter. In the behalf of the safety of the public we protest against the Inspector of the Board of Trade telling the world that "foremen," or "gangs of workmen," are "greatly to blame." In each of the cases in question we have to choose between attributing what occurred to the unexpected failure of some mechanical appliance, or to a neglect of duty not far—if at all—removed from criminality. It is with the responsible managers of a line that the public has to deal in such cases, and to descend at once to the hand that erred, without taking any notice of the head, is something like Sydney Smith's metaphor of patting the dome of St. Paul's to give pleasure to the Dean and Chapter.

As to the brakes in the Wennington case, it seems that the Westinghouse brake was on the tender, that there was a hand-brake in the guard's van, and that there was no brake on the engine, or on any other of the nine vehicles which composed the train. It is, therefore, evident that the brake power was inadequate, and was far inferior to that which should have been applied to a train running at such speed. But we must be allowed to say that the establishment of this fact throws very little light on the cause of the accident. The driver must have known,—at all events, ought to have known, but in our opinion must practically have known, —what the brake power was. He ought to have been aware whether it would retard the train properly before arriving at the station. There is no doubt that it failed so to retard the train, and the question of interest to the mechanic (and indeed to the public) is, why did it so fail to retard it? It is all very well to say there were only two brakes; but the driver knew that. Did both act? or if not, why not? Was the brake on the tender in order? Was it applied? How was it that the engine was driven over the curve at a speed at which it was certain to run off? These are the points which a scientific inquiry ought to elucidate. We fully agree with Colonel Yolland when he says that *if* the train had been fitted with a good continuous brake, and *if* it had been under the control of the driver, and *if* the driver had made use of it, the leading van would not have run 166 yards from the point of crossing. But surely we do not require a Government official to tell us that. That much is perfectly obvious to any one who has read with attention the Report of the Royal Commission on Railway Accidents, published in 1877. If the train was running at thirty miles an hour, it would have been brought up by a good set of brakes in 15 seconds,—that is to say, in 220 yards. But in the absence of this unusual retardatory power a much greater distance was necessary for slackening speed. What we want to know is, when ought the two brakes that were actually on the train to have been applied? When were they applied? and what was the true reason that the speed was unchecked?

It is of the utmost importance that the cardinal points of every disaster should be distinctly brought out. Colonel Yolland calls attention, with great justice, to the noting and registering every fact concerning the permanent way, in any case of accident, before "the removal of those marks which are the surest guides to the elucidation of the causes which led to the accident." But it is possible to take a view of causes which is so narrow as to be of little use. The public naturally says, Who is to blame? But what the engineer wants to know is,—what is to blame? Extra speed, at a given point, was the mechanical cause of the accident. We want to know why, in that particular case, the speed was excessive. It is no reply to be told, if there had been a better brake the train could have been stopped. That we knew before; and it is leaving the track to go off from the inquiry on that scent.

A contemporary, whose information on mechanical points is of an unusually good character, says that the inspectors to the Board of Trade have over and over again pointed out that almost all railway accidents, especially those of a graver character, are due to one of three causes, —the neglect of the block system, the omission properly to interlock points and signals, or the absence of adequate brakes. To a certain extent that is true, although the experience of the last few weeks shows that this list of causes is far from exhaustive. The human machine breaks down, sometimes, under responsibility or fatigue; and it is to this kind of failure that at least two of the latest railway disasters were due. We have with us the weight of the highest authority when we express the opinion that every attempt to throw human responsibility on to automatic machinery has at least its dangerous side. We do not call the interlocking of points and signals automatic. It is a precaution usually of the utmost value. But we do feel convinced that anything which tends to induce the regular use of a violent retardatory power for the sudden stoppage of a train, with the result of allowing the driver habitually to approach a station or crossing at full speed, introduces a new source of danger; and one which, as recent events have shown, may be a more fertile cause of disaster than some of those which we are seeking to avoid. Let us, by all means, have ample brake power, but let it only be relied on, to any great extent, for the prevention of apparent danger, not for the regular working of a line.

THE BRUSSELS EXHIBITION.*

The brilliant representation of her industrial arts that Belgium shows in the Brussels Exhibition is of that peculiar nature that renders almost impossible a hurried epitome. Even after a comparatively lengthy notice of the more salient points, so many important features have been omitted that it would be unjust to pass to the Modern Industrial Arts Section before devoting a few more words to the exceptional show made in the Retrospection Section, which forms the great feature of the Exhibition. Those who remember the Exhibition held at Manchester in 1857, so fitly termed an Exhibition of Art-Treasures, may form some conception of the gathering made here; for the choicest marvels produced from the jealously-guarded and little-known,—too-little-known,—treasure-houses of the churches, the convents, and various ecclesiastical bodies that exist in Belgium, as they have done, untouched for so many centuries, have been contributed, and combine to form, with treasures from the wealthy corporations and educational establishments, a show such as no loan-collection could have gathered together. From sources such as these come forth "gems of purest ray serene," which know not of the ruthless hand of the dealer or the commercial fashion-ruled fluctuation of the auction-room. It is this feature which, as in the case of Manchester, will mark the Brussels Retrospective Section in the annals of Exhibitions, offering a *histoire de travail*, perhaps, even more interesting than that of Paris in 1867, as almost exclusively showing the artistic industry of one country.

There are, however, to be easily detected many marked features of foreign origin, but these only add a zest to the unity of the whole, Italy, Germany, Holland, Spain, England, and the East all contributing to enhance the general effect. Among these stands foremost a feature which would merit, did but our space allow, an article to itself,—the room in which M. Somzee, a Belgian collector, has exhibited a portion of his choice collection of Italian majolica-ware and other rarities. In one large room, in the cases ranged round the walls and in the centre, are gathered together several hundred of the choicest pieces of that sixteenth-century majolica, known as Gubbio-ware, a sight such as is rarely to be seen; and beautiful, indeed, is this array of one of the busiest decorative art industries of the *cinque cento*,—so beautiful, that ten times the space they occupy might be ornamented with the treasures that are here crowded together, gorgeous in their glow of colour, heightened by, in some cases, the delicate *lustro* of age, in others by that of the artist, who, however, was always loth to employ its aid when his own design sufficed to decorate the simple piece of glazed earthenware that he rendered a priceless gem, to be disputed by princes and cardinals. What marvels by Maestro Giorgio and his contemporaries exist in these cases we know not, as no catalogue has been made of this collection, nor has, again, the necessary aid of labels been thought of,—a feature the value of which the Manchester Exhibition of now twenty-three years back did not neglect to understand. But the general character of the works is so familiar that it is easy to distinguish many of the vases and dishes, from Gubbio, from Faenza, from Castel Deruta, from Pesaro, and from Forti, and many another pleasant town in Raffaelle's country; the well-known *spezzeria*-pots from Caffagiolo,—the tradition of the ornamentation and use of which is handed down to the druggists' shops of the present day. A rare collection of glazed and painted tiles, also of Urbino ware, fills a space at least three yards square in the centre of the room, the corners of which are crowded with other treasures of the Italian industrial arts, too numerous to mention, but among which let us not pass over the several rare Florentine *cassoni*, or marriage-coffers of the fifteenth century, carved and gilt and painted with all that luxury of decoration that belonged to the early Renaissance. No famous artist has happened to decorate the panels which adorn each of these coffers; but luck might have thus spared the creation of a great painter, for, as is well known to collectors, the artists of the Renaissance did not disdain to paint such *cassoni*.

To one other treasure of M. Somzee's collection we can alone afford to refer,—a choice piece of time-stained, but still perfectly-preserved, Arras tapestry, which has wisely been placed behind glass. Complete with its border, the whole piece scarcely measures 2 ft. 6 in. square. Through the now even-toned mellowness to which exposure has reduced the once brilliant colours, lighted up by the glitter of the gold-thread, it is not difficult to trace the master-design of some contemporary of Memling, if it is not by that patient artist himself. Purchased in Italy, this gem of the looms of Arras has returned to its native country, and now justly forms one of the pearls of the tapestry show.

A feature which it might be expected would have proved, as such gatherings usually do, of more than passing interest,—the collection of national portraits,—has, owing to the manner in which these have been hung, lost much, if not all, of its instructive character. In their valuable aid as decorative "properties" these portraits have been sacrificed, and, scattered about the Exhibition as they are, an examination of them is rendered difficult to a degree; while here, again, the utter want of label or catalogue renders these pieces of painted canvas unmeaning. To be of instructive value, a collection of portraits, whether national or what not, must be hung in some systematic order, and, above all, be carefully catalogued.

Another of the great arts of the past in Belgium is here but very inadequately represented,—the art of the glass-painter. Destruction has sadly lessened the number of masterpieces with which the Belgian painters decorated many a cathedral and church throughout the country. Many fine pieces still exist, but these could not, of course, be exhibited. There are, however, to be seen some good specimens of the art, but which give only a very imperfect idea of the power of the renowned Flemish *verriers* of the Middle Ages and the Renaissance.

To those interested in musical matters, the choice collection of Belgian musical-boxes particularly appeals; here, from the early days when the musical notes find no separate expression beyond a few mere dotted marks placed between the lines of the big-lettered psalter, we trace the beautiful art in which the Belgians were renowned throughout Europe down to our own modern complicated system. As a complement to this collection, there are exhibited a number of musical instruments. These, again, are mostly made in Belgium, which boasts of more than one famous maker, Rucker, of Antwerp, being the Belgian emulator of the fame of Stradivarius and Guarnerius.

A word is due to the Belgian armourers, whose works are here well exhibited; the Belgian knights of old were no less generous patrons of the artist-blacksmiths of their time than were the princes of Italy, of England, of Germany, and of France. Nor are there wanting among the well-chosen collection of arms beautiful specimens of work, on which something more than the ingenuity of the artisan has been bestowed,—marvels of patient decoration, rich with damascened work and engravings; arquebuses and powder-flasks, gems of coloured inlaid work, and

* See p. 318, *ante*.

sword-hilts, worthy a place by the side of the goldsmith's most cunning productions. Among the arms, all choice specimens, will be noticed with more than usual interest the sword of Rubens, its hilt a rare piece of damascened gold work, not far from which reposes in another case, picturesquely filled with the collars and badges of a number of St. Sebastian or archery societies, the collar that Rubens wore in his official capacity at the Academy of Fine Arts at Antwerp,—another piece of delicate metal-work.

With a hasty mention of the rare collection of ivories,—to which no reference has as yet been made,—our notice of the Retrospective Section must unwillingly be drawn to a close. Of these peculiarly interesting works, in which have been preserved for us some of the few remains of the art of the mystic commencements of Christianity, the Exhibition shows some rare specimens of several of the periods into which collectors classify these rare and precious works; early Christian diptychs, and quaint book-backs, religious, Romanesque, Renaissance, and purely secular work. In the country of "Il Fiammingo," as François de Quesnoy was called by the Italians, among whom he worked so long, there are naturally here to be found a number of works attributed to that renowned artist; attributed only, as De Quesnoy never signed his work, but fame has not neglected to keep due record of his memory, as it has of many another great artist of the busy past, and long is the list that Belgium has contributed to the history of art. The exhibit of the Minister of Public Instruction, to which casual reference has already been made, is one that deserves more lengthy notice, consisting as it does of a large and carefully-selected series of photographs of all the great works of the Belgian sculptors, from the eleventh century down to the present day, whether existing in Belgium or abroad, where so many Belgian artists have left their works. To quote at length the list of works exhibited would form an interesting epitome of the history of Belgian sculpture. Here each photograph is carefully labelled, and a genuine pleasure it is to be able thus to pass a complete review of one of the great branches of the past art of the country. One is carried in this manner to many a quiet old church in Belgium, and many a gorgeous cathedral in France, in Germany, in Austria, and in Italy. Name after name, too little known, passes before one, and work of rarest merit, reposing undisturbed in out-of-the-world corners and in still busy centres of activity. Exquisite work of the eleventh, twelfth, and thirteenth centuries; work of the succeeding centuries and the Renaissance, among the great artists of which Colin of Mechlin, the artist of the Emperor Maxmilian's tomb at Innsbruck, and some less known work at Prague and at Heidelberg, should take a higher rank than is usually accorded him; work of the sixteenth and seventeenth centuries, when the Belgians still held high their reputation; down to the last century, and the present day, when they fall no lower than their brother artists of the rest of the world; the list is a long and suggestive one.

In Belgium the artistic traditions of the past are not yet dead, as the section of the modern industrial arts clearly shows, and to this we must hurry on, regretfully leaving the retrospective section, to pass time in which would be an education in itself. One feels ashamed to have to notice in the haste of a few minutes' survey works that have taken so many patient weeks and months to design and elaborate, and which can never again be produced,—which seem, indeed, almost out of place in the bustle and the crowd, speaking as they do of the quiet and repose of the cloister, the workshop, and the hearth, of centuries ago.

Chelmsford Main Drainage.—On the 30th ult. Mr. F. Chancellor, chairman of the Sanitary Committee of the Local Board of Health, Mr. Charles Pertwee, the Board's surveyor, and Mr. W. J. Botterill, of London, the contractor, met in the King's Head Mead, and raised the "penstock" in the old sewer, and set the sewage in motion in the new outfall sewer, which is of brick and concrete, egg-shaped, and 2 ft. 6 in. high, by 1 ft. 8 in. wide. They afterwards walked to the receiving-tanks at Brook End, a distance of 1¾ mile, and there checked the time of the arrival of the sewage, which worked out exactly as calculated by the Surveyor. Chelmsford, according to Mr. Chancellor, is now in the enviable position of being well drained without having to pump one pint of sewage.

THE PROGRESS OF ELECTRIC LIGHTING.

EYESIGHT AND SAFETY.

The general satisfaction which has hailed the latest effort at electric lighting, that of the Royal Albert Dock at Silvertown, gives an especial appropriateness to the printing, at this moment, by the Institution of Civil Engineers, of the "Notes," by Mr. K. W. Hedges, C.E., "On the Principal Systems of Electric Lighting in Use in England and the United States." Already printed in the convenient pamphlet form in which the Transactions of the Institution are from time to time issued, these Notes will form part of the forthcoming fourth volume of the Proceedings for the Session 1879–1880, which will be volume lxii. of a series which, under the judicious editing of Mr. James Forrest, is growing into a comprehensive and extremely valuable professional library.

The lighting of the Royal Albert Dock is an attempt, on a large scale, to turn night into day. Each of four horizontal steam-engines, of 20 nominal horse-power, drives seven Siemens dynamo machines, which act as light-producers, and one machine of the same kind, which is used as an excitor. These engines are placed at four stations, from each of which it is intended to work twenty-four lights. The number of lights actually produced is twenty-six, each of which is placed on a latticed standard, 80 ft. high. The area of the Dock thus illuminated is about a mile and three-quarters in length.

The three systems which, according to Mr. Hedges, have made the most progress in practice are the Gramme, the Siemens, and the Brush. An adequate account of the rapid extension of the last-named system in the United States does not, unfortunately, come within the survey of the "Notes" in question.

In England, the most important installation of the electric light during the year 1879, was, we are told, the lighting of the Picton Reading-room in Liverpool, which is effected by the Gramme machine, and the Serrin regulator or lamp. The area lighted is not stated by Mr. Hedges. Three Serrin lamps are enclosed in an umbrella-shaped reflector, which throws the light on the ceiling, whence it is a second time reflected on the eye. The glare is thus diminished, and that probably with less loss of light than by transmission through partly transparent screens. A slight hissing noise is observed. The cost of the light is stated at 1s. 9d. per hour, as compared with 7s. 8d. per hour for gas. The horse-power employed is not stated.

The St. Enoch Station, the terminus of the Glasgow and South-Western Railway, is now lighted by Crompton lamps, arranged in lanterns having octagonal mirror reflectors, and slung about 35 ft. above the platform, and 27 ft. from the side walls. The span of the roof is 198 ft., and the height from the platform 80 ft. The length is not stated, nor is the engine-power. Each lamp is worked by a 6,000-candle Gramme machine. The cost of the six lamps is 3s. per hour, independent of the cost of driving power. The gas previously consumed cost 4s. 5d. per hour.

The esplanade of the town of Blackpool is lighted by four lamps, each worked by a separate Siemens generator. The lamps are fixed on the top of pillars, 60 ft. high, and are enclosed in lanterns furnished with reflectors that throw the light for about 150 yards in each direction. Mr. Alexander Siemens states the total cost of lighting six lamps, of 6,000-candle power each, for five hours, at 3*l.* 6s. 10d. by electricity, as against 7*l.* 5s. by gas. In comparisons of this kind the local cost of the gas ought always to be stated. It is true that this price is likely to be proportionate to that of the steam-power used for working the dynamo machines. But when information is volunteered on these points it ought to be complete, as it is otherwise of but little value. If we calculate aright, the cost per hour per lamp is 26·7d., as against 21·0d. at the Picton Reading-room. But the candle-power at the latter spot is not stated. In fact, it seems very difficult to get at the exact cost of electric lighting; when we come to inquire into details, some omission or other often becomes obvious.

The lighting of the reading-room of the British Museum is effected by four Siemens lamps, of 6,000-candle power, each worked by a separate dynamo-electric machine. Details of the engine-power are not given. The cost is brought out at 8s. per hour, as against 4s. 9d. for gas, at the price of 3s. 9d. per 1,000 cubic feet. In all these matters it is most desirable that not only results, but details, should be given. The amount of the illuminating power produced at the focus is one thing, that of the quantity and quality of the light that falls on the page of the reader is another. As far as we can form an opinion, we should say that the effect on the eye is highly objectionable in both cases. We are convinced that nothing tends to the rapid deterioration of the sight more certainly than reading, or still worse, drawing, by gaslight. We recommend every student or every one who reads or writes much by artificial light, to use a Queen's reading-lamp, or a candle or pair of candles provided with a shade. We should expect that the degree of pulsation which so often characterises the electric light would render it far more injurious to the working eye than gas itself. Then it has to be borne in mind that the lamp or candle may be at 18 in. or 20 in. from the book; the gas-burner may be at 3 ft. or 4 ft.; the electric-light at 30 ft. or 35 ft., and in each case the proportion of light that falls on a page to that created at the focus of illumination will be inversely as the squares of these numbers. Let us light open spaces, as far as practicable, by electric suns; but we counsel those who care for their eyes to reflect on what we have said. Let them compare the fatigue of the eye after three or four hours' work by the Queen's reading-lamp and by gas.

A statement of the performance of the Brush machine, furnished by Mr. Brush, is printed by Mr. Hedges, but it is of too technical a nature for extract. Mr. Hedges has not so much to say as to Mr. Edison's efforts as will be found in the pages of the *Builder*. The Werdermann lamp, to the light of which we are disposed to give the preference at present over any electric light with which we are acquainted, has been introduced at the South Kensington Museum. Eight of these lamps, Mr. Hedges states, were placed in the Art Library at that institution, and worked off a Gramme machine. The light was steady, and the room kept cool, but the cost was found to be greater than that of lighting by gas. Considering the small size of the apartment, it is difficult to make this statement harmonise with those that precede it. We can conceive no cause for extra cost in the Werdermann lamp. We rather tend, therefore, to the view, that in the care which is given to every matter of detail in the Art Museum, under the direction of the thoughtful and accomplished librarian, photometric observations may have been taken with more direct reference to the visibility of the page brought under the eye of the reader, than to the amount of light produced at each luminous focus. At all events, we trust that what we have said may have the effect—first, of inducing all writers on the subject of electric lamps to bring forward full, clear, and attested details of every instance of illumination as to which they write; and secondly, of directing attention to the great difference between the quantity and the quality of the light which is desirable for the student, and that which is desirable for the nightly illumination of halls and theatres, of stations and dockyards. Nor should it be forgotten that it is in the lighthouse and the steamboat that the chief field for the display of the electric light is at present found; nor that it is yet an untried question how far safety, combined with adequate illumination, can be offered by the electrician to the coal-miner.

WESTMINSTER VESTRY-HALL COMPETITION.

The drawings sent in competition have been open to inspection at the United Westminster Schools during three days of this week.

The design to which the first premium has been awarded we publish in our present number, with some descriptive particulars, and may therefore dispense with any detailed comments upon it, which our readers can make for themselves. We may say that, as far as plan is concerned, we believe we should have come to the same conclusion as the referee,—that it is, on the whole, the best working practical plan of the set, though it has points in detail very much open to question. Some people may like a surveyor's clerk's office with two rather small windows on either side of a fireplace in the outer wall; but we should hardly ourselves recommend such an arrangement. Again, the requirements for two retiring-rooms with lavatories, &c., in connexion with the public hall, would naturally lead to the conclusion that these are intended for gentlemen and ladies respectively, since rate-

payers are to be found in both sexes; and how impossible this use of the rooms would be will be seen at once from the plan. It may be said that in this and some other points the wording of the instructions is not so explicit as it should have been. Judging, however, from some experience in looking at competition drawings, our impression is that not one competing architect in fifty understands the planning of accessory offices of this kind. For the external design of the building we refer the reader to our illustration and description.

Of the remaining designs there are three,—"Portcullis" (second premium), "Black Star" (third premium), and "Unitas,"—which especially deserve attention. We may, moreover, mention that "Suum Cuique" shows a neat Free Classic elevation, which, however, hardly looks so well in perspective; and "Civis," a good, but rather heavy, elevation, in more orthodox Classic style, but which is obviously too expensive. The plans in both cases are not good.

The main requirements of the building are surveyor's and vestry-clerk's offices, with waiting-rooms, &c.; a rate-collectors' office, with separate entrance from the street, but communicating internally with the general offices, and other usually required offices for the work of a small town-hall establishment; rooms for medical officer, sanitary inspector, gas-meter testing, &c. These come on the ground-floor, and on this floor also, in the rear of the building, is to be a large hall for ratepayers' meetings, with public entrance from Gardener's-lane, on the flank of the building. On the second-floor is to be a vestry-hall, with lavatory and hat and cloak rooms (specified to be in communication with each other and with the lobby), with a strangers' gallery, which is rather ambiguously described as "not to be within the area of the vestry-hall,' and yet to be "a more important feature than is usually the case," and with a retiring-room contiguous to it, for use on occasions when strangers may be ordered to withdraw. The rest of this floor is occupied by committee-rooms and a waiting-room for deputations. The only important point in the plan which is left to the discretion of the competitors, therefore, is whether the vestry-hall should form a feature in front of the building, or should be kept in the centre. The latter is, of course, the most economic plan, and has, therefore, been wisely adopted by most of the competitors, though, of course, it destroys the principal opportunity of giving any special architectural character to the front. We proceed to make a few comments on the three designs above-named.

"Portcullis" (Mr. John E. Trollope) is a design of late Elizabethan character, effective in general appearance, but too much is spent on a clock-tower, which runs away with a great deal of masonry, and is out of place where economy was an object. The vestry-hall is brought to the front on the upper floor, and its windows form a feature in the design of the front. The vestry-clerk's offices are fairly planned, to right of the main entrance, and the rate-collectors' office is conveniently arranged, except that the fireplace comes in a very awkward position. Surveyor's rooms well arranged; waiting-room would be better *en suite* with clerk's room. The way round to the Sanitary Inspector's office seems tortuous, and the general arrangement of plan somewhat deficient in simplicity. Approach to the large room good, but lavatories opening into main passage too conspicuously next door to each other. We propose to illustrate this design in our next.

"Black Star" (Messrs. Hunt & Steward), a "Queen Anne" design of not very interesting character. Vestry-clerk's offices conveniently placed and arranged; rate-collectors' room in right place, but cuts off the light from the passage; surveyor's offices satisfactory; retiring-rooms to public hall badly arranged if they are supposed to be for ladies and gentlemen respectively. First floor has vestry-hall in centre, members' cloak-room and lavatory clumsily planned, and room wasted in this and staircases; waiting-room too far off and with bad access to vestry-hall.

"Unitas" (Mr. J. P. Seddon), a Gothic design, certainly the best bit of architecture of the set; the author sends alternative Queen Anne elevations, which are adequate; any one who can design in Gothic can design in Queen Anne; "there's nothing in it." Alternative plans, A the cheaper, with vestry-hall in centre; B with vestry-hall in front, and forming a good feature in front elevation. The waiting-rooms which should be in immediate connexion with the vestry-clerk's and surveyor's offices respectively are not *en suite* with them in either plan, in one case very far off. The public hall is an octagon, with low walls and high roof, much more inexpensive in construction than the others, but the octagon is a bad shape both for speaking in and for seating the audience. The two sets of retiring-rooms are very well planned in themselves and quite separate, but we can hardly imagine it would meet the case to have them opening out of the hall at the furthest point from the entrance; they should be in connexion with the access to the room. The upper floor is very satisfactory in plan B; in plan A the cloak and lavatory rooms are too prominent on either side of the entrance-passage to the vestry-hall, and the waiting-room for deputations is too disconnected and has bad access to the vestry-hall; but this defect exists similarly in the first premiated design. This is the only plan which exactly carries out the instructions as to the strangers' gallery, which is partially screened from the vestry-hall by an arcade of three arches, and has commodious retiring-rooms immediately in the rear.

There is one important point in connexion with the decision in regard to which some explanation is desirable. The instructions state that the cost of the whole building is not to exceed 15,000*l*. The three premiated designs are just over this limit, but in all these cases, according to the referee's report, this is without counting the public hall in the rear. But the instructions have no reservation in regard to the public hall; they state explicitly that the sum above named is to include the whole cost, exclusive of movable furniture. Has there been any subsequent understanding upon this point? And if so, did all the competitors know of it? If not, it appears to us that "Unitas" may have a technical ground of complaint. His plan A is the only one which at all looks as if it might be carried out for 15,000*l*., including the hall of meeting. We do not say his plan is better than that of "Stet,"—in some points it is decidedly inferior, though the architectural design is certainly better; but he has made an effort to comply with the stated conditions of cost, with more apparent success than the others, and this calls for some explanation. We put the question, therefore, but without by any means joining in or favouring the complaints which have been made about anything like unfair play, which we do not credit. On the contrary, we feel very strongly that some of the profession are putting themselves in a very absurd position by clamouring against the decision of a professional referee, immediately after there has been a general declaration on the part of a great number of their body against all competitions in which a professional referee is not employed. This is both foolish and undignified. The profession, by the mouth of their central representative body, have undertaken, or a great number of them have, not to enter into any competition unless there is to be a professional adjudicator. They have no sooner done so, than they seem disposed to fall foul of the first professional adjudicator who decides a competition. They cannot expect infallibility in a professional referee any more than in a committee of non-professional men; all that can be reasonably counted on is that a professional man will understand and go into the details better. People may think the umpire has made a mistake, though this has yet to be proved; but in all games it is considered very bad form to question the decision of the umpire, if he is a properly-constituted authority: and the *lex non scripta* which obtains in this respect in matches at cricket, or boating, or billiards, is just as applicable to architectural competitions.

Purchases for the Indian Museum.—The Science and Art Department lately decided to send an officer to India to make purchases of Indian art objects, to complete the collections exhibited at the Indian Museum, South Kensington, and it has been announced that Mr. Caspar Purdon Clarke has been appointed to this mission, and that he was to leave for India on the 7th inst. A fund of about 8,000*l*. has been placed at his disposal, of which 3,000*l*. has been contributed by the India Office, this sum being the unexpended balance received on account of the exhibition of the Prince of Wales's Indian presents in 1876, and reserved by his Royal Highness for the purpose of promoting the interests of Indian art.

NEW THEATRE AND DISSECTING-ROOM, MIDDLESEX HOSPITAL.

In order to meet the requirements of the increasing number of students attending the medical schools, the Board of Governors at the close of the last session decided upon partially rebuilding the schools. These works have been carried out during the vacation, and were opened on Monday last by Mr. H. A. Ross, M.P., the annual address to the students being delivered and the prizes distributed in the theatre on the same day.

The new buildings comprise a theatre, dissecting-room, demonstrator's, lecturer's, and prosector's rooms, and large cloak-room for students. The form of the theatre is semicircular, with prolonged sides, the diameter being 34 ft.: it is capable of holding 200 students, all seats being provided with desks for writing, it being intended to use the theatre for examinations. The theatre is warmed by means of air heated by passing through a chamber under the building containing hot-water pipes; the fresh air being drawn in from the garden and delivered warm in a distributed form in different parts of the theatre. It is lighted by a powerful sun-burner supplied by Messrs. Strode & Co., and in connexion with this is a ventilating-shaft for the extraction of vitiated air. Natural ventilation is also provided by means of a large lantern light.

The dissecting-room measures 35 ft. by 30 ft., and is fitted up with every modern appliance. The building, although carefully planned and substantially carried out, is not intended to be a permanent structure, it being contemplated at some future time, when the opportunity of acquiring other land occurs, to remodel the whole of the schools on a larger and more complete scale.

The works have been carried out by Messrs. Longmire & Burge, under the superintendence of Mr. Matthew Wyatt, architect, of Great Russell-street.

JOTTINGS IN EXETER.

Only one or two buildings of any importance are at present in progress in Exeter. The eastern end of the site of the grammar-school, in High-street, is being built upon by the Exeter Arcade Company (Limited), who are erecting an arcade and coffee-tavern, from the designs of Mr. James Crocker, architect, Exeter, the builders being Messrs. Stephens & Son. The western portion of the site has been secured by the Government for new chief post-office buildings for the city. The new grammar-school buildings are being erected at Victoria Park, Mount Radford (about a mile from the city), from designs by Mr. Butterfield. Many of the citizens are greatly dissatisfied with the removal of the school, not only on account of the demolition of the ancient buildings, but because they feel that they are being practically deprived of what was essentially a school for the children of tradesmen and the better class of working men; and the promoters of the change are accused of intending to make the school into a "high-class school," for the children of people higher in the social scale than those for whose children it was originally intended.

For the new church at Newtown, the plans sent in in competition by the architects of Exeter (to whom the competition was limited), are now under consideration.

St. James's Church, at the higher end of Sidwell-street, is being restored, under the direction of Mr. R. Medley Fulford, architect.

More than one interesting specimen of Domestic architecture has lately been demolished to make way for modern "improvements,"—notably a house at the corner of Goldsmith-street.

The Sanitary Exhibition remains open until the end of this week, but adventitious attractions have had to be put forward to draw the multitude. The Militia band plays every evening, and there are other novelties, such as dancing dolls, and "Try your weight, Sir?" In this way the affair has, we hear, become quite popular.

The statue of the Earl of Devon, in Bedford-circus, is to be unveiled this Saturday, the 9th. It is of bronze, on a granite base, and is the work of Mr. J. B. Stephens, A.R.A., who is a native of the "Ever Faithful" City. Statues of Mr. Denham (a local light) and Sir Thomas Acland, on Northernhay, and of Earl Fortescue,

in the Castle Yard,—all in marble, are by the same sculptor; so are the statue of the Prince Consort, in the Albert Memorial Museum, and the group of the "Deerstalker," now removed from Bedford-circus into Northernhay to make way for Lord Devon's statue. It is not often that native talent is so largely appreciated by fellow-citizens.

In the extensive workshops of Mr. Harry Hems, in Paris-street, a number of works in carving and sculpture were in hand at the time of our visit. They included a fine memorial pulpit and prayer-desk for the parish church of St. Michael, Macclesfield, from the designs of Mr. J. Stevens, architect, Manchester. The pulpit is octagonal, and of wainscot oak, the style being Perpendicular. Eight detached columns rest upon the base, from which spring groins, carrying the body of the pulpit. In this, on each cant, is an ogee-headed niche, containing a sculptured figure, the whole being surmounted by an enriched cornice. The prayer-desk and seat partake of the ornate character of the pulpit. We also noted a couple of figures, SS. David and Cecilia, for the Rev. C. J. Ridsdale's well-known church at Folkestone. These are from the designs of Messrs. Morris & Stallwood, of Reading. A fine rood-screen in oak is in progress for Rodmersham Church, near Sittingbourne, Kent. Of the original screen only one or two small fragments are left, and they have afforded the design for, and been incorporated in, the new work. The screen contains a great deal of delicate detail, and will be surmounted by an elaborate cross. Some rich carved work in old English oak is also in hand, from the designs of Mr. John Lessels, architect, Edinburgh; in one of the circular panels an enlarged and sculptured representation of the old seal of the Abbey of St. Bathan's, at Berwick, has been introduced. Stalls are in hand for St. Michael's Church, Honiton, where Mr. Hems has already restored the rood-screen, which is 50 ft. long, and the finest, perhaps, in Devonshire, for it is groined its unbroken length on both sides. The two parclose screens in the same church are now in hand, *in situ*. Mr. Edward Ashworth, of Exeter, is the architect concerned. For the church of the Holy Cross, Standlake, Oxon, Mr. Hems has just completed a series of full-length angels for the hammer-beam roof. Each angel holds an heraldic shield in its hand. These figures, which are of oak, and 5 ft. high, have been executed from the designs of Mr. Clapton C. Rolfe, architect, Reading. Mr. Hems has been commissioned to execute thirty-two figures of saints, martyrs, and virgins for the same church. He has also just commenced a particularly rich font and cover,—in all, 13 ft. high,—for the parish church of Rotherham. It is a memorial to the late Rev. W. Newton, vicar, and has been designed by Mr. J. P. Seddon. The font itself is of red Corsehill stone, and the cover is of oak. In richness this font recalls to mind some of the sumptuous examples to be met with in Norfolk. For the interior decoration of the *Citizen* newspaper office, Glasgow, Mr. Hems has in hand a number of carved panels, of the so-called "Queen Anne" character, from designs by Mr. T. L. Watson, architect, Glasgow. A rather rich reredos is in hand for Cockington Church, near Torquay. It is in oak, and consists of three canopied compartments, each terminating in a profusion of pinnacles and gablets. This has been designed by Mr. James Hine, architect, Plymouth, from whose designs Mr. Hems is also making a font for Delabole Church, Cornwall. This font is in the fine white Beer stone of which Exeter Cathedral is in great part constructed. Among other works in hand in the shops are some full-length figures of St. Patrick, for Upper Reformatory, near Cork, of which Mr. S. Hennessy, of that city, is the architect.

The Classes of Architecture and Construction at University College, London, will be again conducted by Mr. T. Roger Smith. They will commence on Tuesday next, the 12th inst. Mr. Roger Smith will also repeat the course of lectures on professional practice which he delivered for the first time last session at this college. The class for the study of this subject will meet for the first time on Monday, the 25th inst. It may be worth while to state that any gentleman desiring to attend a single lecture in either class as a visitor will be admitted on giving his name to the attendant.

THE PARKES MUSEUM OF HYGIENE.

This Museum was re-opened on Monday last (after the usual vacation) in connexion with the inaugural *conversazione* of the Medical School at University College. There was a large attendance, and much interest was manifested in the collection of sanitary appliances, to which many additions have been made of late, including a model of a new ventilator presented by Messrs. William Tonks & Son, called the "Architrave Ventilator." This ventilator is an adaptation of the Currall patent, and has been designed by Mr. Mark H. Judge for the purpose of making an architectural feature of the provision for changing the air of rooms—a provision now admitted to be so necessary that without it no apartment can be said to be properly ventilated. As its name indicates, this ventilator is made to form part of the architectrave or frieze over doors and windows, the opening for the inlet and outlet of air being made above the lintel or arch, or between them and the framework, thus rendering unnecessary any cutting or interference with structural arrangements. The architrave ventilator is made of metal, and consists of three parts, which fit together in such a way that it may be adjusted to suit doors and windows of various sizes. Acting both as an inlet and outlet, it is so constructed that while the incoming current of air is turned upwards, the fresh air is very quickly diffused, and is not carried direct to the ceiling, so as to cause a down-draught, but when gas is being burnt, or when from any other cause the air is hot or oppressive, the ventilator immediately acts as an outlet; and in order that its action may be regulated, whether as inlet or outlet, a controlling lever is provided.

ROAD FORMATION AND STREET PAVEMENTS.

There are several volumes descriptive of road-making, out of which some knowledge may be obtained, and yet there may be very little useful information as to the best modern forms of paving for streets over which there is the largest and heaviest traffic. To settle as to the best material and the best form several points require to be considered.

Highways, streets in small towns, and streets in larger towns, over which the traffic is small, may have macadam formations, the foundation being concrete, and the surface hard broken granite; otherwise, the hardest broken stone available. It is of the utmost consequence to obtain and use the hardest stone available, even if the first cost is more, as bad material may be dear if given.

All roads and streets should have well-drained, dry, and sound subsoils; and all roads will wear better, lasting longer, if there is a bed, or foundation, of concrete, from 3 in. to 9 in. in thickness. This concrete to be the true road; the covering, or pavement of any sort, being only a veneering, to be renewed as worn out.

Roads and streets should have smooth surfaces of such a nature as to afford a foothold, and allow wheels to roll with the least jumping. Wheels, in motion over an uneven surface, jump and ram in proportion to the roughness of the road and the velocity of the wheels. A locomotive engine on the best and smoothest steel rails, jumps, and rams in proportion to the velocity. Railway engineers have found out by experience that swift trains punish the rails and roads most, and consequently cause most cost in maintenance and repairs. This is true also as to street surfaces.

Railways use steel rails as offering most endurance under the weight, velocity, and ramming blows of the engines and trains.

The nearest approach to a steel-rail surface, for an ordinary street surface, is asphalte. Tramways are not being considered. The objection to asphalte is its slipperyness in wear, under certain conditions of wet and gradient.

Granite and limestone sets, and hard grit stones, make good pavements; but not the best, as the surfaces are rough, from the dimensions and nature of the materials. Indeed, it is considered necessary to lay such stone pavements with open joints, to give foothold. The rough surface of the stone and the open joints constitute a faulty street pavement. Carriages, carts, wagons, cabs, and, above all, spring-vans, if they move at or above six miles per hour, roll, jump, and ram, destroying the road or street over which they move, in proportion to the number of the vehicles within a given time, the weight moved, and the velocity. If there is a sufficient foundation of cement concrete beneath to prevent mud working through the joints to the surface, the surface-wear will not be sufficient to cause mud, but there will be some wearing of the stone and a considerable wearing of iron from wheel-tires and the shoes of horses. If there is a poor and weak base, and the stones can be rammed into it, and the subsoil can rise, there will be a rough, uneven, and muddy surface.

However good granite paving is in a town,—that is, however smooth and solidly laid,—it is noisy and destructive to carriages, destructive to an extent the general public are very little aware of. Coachbuilders, however, know something about it, as the best portion of their income is derived from repairs and renewals.

Of all the road surfaces for streets of swift and heavy vehicular traffic, broken stone makes the worst; and if the foundation is soft, the dirtiest. A macadam stone street in London is merely a mill on which the stone is crushed and ground to mud in wet weather, and to dust in dry weather. The wet mud is, however, a disinfectant; and, as such, does serve to cleanse the street from horse-droppings, but the dust, mixed with such filth, is most offensive and in every way injurious to shop goods, to clothing, and to the lungs and throats of the inhabitants. The macadam surfaces at Victoria-street, Whitehall, Great George-street, and Parliament-street, are a national disgrace. These streets and their condition ought to open the eyes of members of Parliament to the crass ignorance and stupidity of vestrymen. Streets over which the combined wisdom of Parliament walks or drives to and from the Houses are the worst made, worst cleansed, and consequently the dirtiest in London.

Of late, wood has come into use for street-paving, if one may speak of "wooden paving stones," as the Irishman spoke of "wooden milestones," or of the fireproof warehouse which was "flagged with cast-iron boards." But to the wood-paving: this, when properly laid, possesses all the properties but one requisite for the best surface of a street of great traffic. The surface is smooth, soft, and consequently noiseless, or nearly so. The lacking property is endurance. Wood need not be expected to endure like granite, but the carriages moving over it will last much longer than when running over granite. The best wood-paving must be laid upon a foundation of Portland cement concrete from 6 in. to 9 in. in thickness, to be finished on the surface to absolute truth. The blocks of wood to be pine, 4 in., 5 in., or 6 in. in depth, according to the traffic, the blocks to be laid on a bed of tarred felt, and jointed with a bed of felt (*close-jointed*). A thin layer of asphalte over the concrete may take the place of the bed of felt, but both will be better. A sound soft wood will make a better surface than the harder woods, as the soft wood will give a little to the horses' shoes and wheels of carriages, and rise by elasticity, producing the least noise. Such a street-surface will be even, smooth, and water-tight; there will be neither grit nor mud. In wet there will be no mud, in dry weather there will be no dust; and such surface may be washed by hose and jet without injury to the drains and sewers, such as would arise from muddy stone pavements or very muddy macadam.

If all things are considered, such as comfort in riding, freedom from noise, from mud, and from dust, it will be cheaper to renew wood-paving every few years, as the case may be, rather than to retain granite sets or macadam.

One of the items of cost in changing from macadam to wood, is the breaking-up of the old road and the forming the Portland cement concrete foundation. In some cases it will be cheaper to retain the macadam crust, level it over with Portland cement, and on this lay the wooden blocks in the usual manner, raising the footwalks. Of course, there are many cases where this cannot be done, but where the roadway must be broken up.

London is just now under a wood-pavement *furore*, to which all who love comfort and quietness may most heartily wish success.

A thunder-storm ought to teach the vestries a useful lesson, namely, that footwalks and roadways may be washed by hose and jet. In Paris and in Vienna the streets are regularly washed and watered by hose and jet. If the water belonged to properly-constituted municipalities in London a similar process might be adopted with great advantage.

Civil Engineer.

TABLE GIVING COST AND PARTICULARS OF VARIOUS PAVEMENTS.

Name of Firm.	Address.	Description of Pavement.	Depth of Concrete.	Depth of Paving.	Total Depth.	Cost per Square Yard. Concrete	Paving.	Labour.	Total per Yard.	Cost of Repairs Annually.	Estimated Life.	Cost of Cleaning per yard per annum.
			Inches	Inches	Inches	£. s. d.	£. s. d.	£. s. d.	£. s. d.			
Asphaltic Wood Pavement Company.	Bond-court House, Walbrook, E.C.	Red or yellow deal in blocks, 3 in. by 6 in. by 9 in., on end, resting on ½-in. layer of mastic asphalte, which rests on a 6-in. bed of lias lime concrete (proportions, 1 lime to 5 ballast). The blocks are spaced ½ in. apart in the direction of the length of the road. Heated asphalte poured into joints to a depth of 2 in.	6	Asphalte ½ Wood 6	12½	...	...	...	0 12 9 to 0 14 0	Free for three years, then about 9d.	Twelve to fifteen years.	2d.
Henson's Street Paving Company.	No. 7, Westminster Chambers, S.W.	Red or yellow deal in blocks, 3 in. by 6 in. by 9 in., each joint being filled with tarred felt. The blocks rest on tarred felt, which forms an elastic and impervious joint between them and the concrete.	6 9	5 6	11 15	0 3 3 0 4 6	0 7 0 0 8 0	0 2 9 0 3 0	About 0 13 0 to 0 15 6	*Nil* for two years, then 1s. per yard.	Wear ⅛ in. to ¼ in. per annum under heavy traffic.	3½d.
Improved Wood Pavement Company.	46, Queen Victoria-street, E.C.	"Baltic Red Deal" is used in blocks, 3 in. by 6 in. by 9 in., resting on a 6-in. bed of concrete. Joints of wood filled to half depth with asphalte.	6	6	12	0 3 3	0 6 0	0 2 9	0 12 0	From 9d. to 1s.	From eight to ten years.	3½d.
Limmer Asphalte Company.	85, Gracechurch-street, E.C.	Rock asphalte, ground to powder, heated and compressed by ramming, resting on surface of cement concrete.	6	2	8	0 3 3	0 12 0	0 2 6	0 17 9	*Nil* for some years.	Wear about $\frac{1}{16}$ in. annually under heavy traffic.	2d.
London and Provincial Wood Paving Company.	54, Gresham-street, London, E.C.	Red or yellow deal blocks, cut obliquely into rhomboids, 6 in. by 6 in. by 6 in., with the grain of the wood at an angle of 60° from the base. These are supported on each side by slabs acting as girders to which the blocks are dowelled. A foundation of concrete is prepared.	6	5¼	11¼	0 3 3	0 7 6	0 3 3	0 14 0	Free for three years, then 10d. per annum.	Ten years.	2d.
John Mowlem & Co., Contractors.	20, Grosvenor-road, London, S.W.	Red or yellow deal blocks, 3 in. by 6 in. by 9 in., are laid on a foundation of 6 in. of concrete. The joints between the blocks are grouted and well rammed.	6	6	12	...	...	...	0 12 0 to 0 13 0	Free for three years; 1s. 6d. to 2s. per yard per annum repairs and renewals.	Under ten years.	2d.
Val de Travers Asphalte Paving Company.	14, 15, and 16, Palmerston Buildings, E.C.	Compressed rock asphalte, with a foundation of concrete asphalte ground to powder by Carr's Disintegrator, and rammed whilst hot.	4 6 9	1½ 2 2¼	5½ 8 11¼	0 2 3 0 3 3 0 4 9	0 6 3 0 9 3 ...	0 2 6 0 2 6 ...	0 11 0 to 0 15 0	*Nil* for some years.	Wear about $\frac{1}{16}$ in. annually under very heavy traffic.	2d.
The Surveyors' Report, Sunderland.	... ...	Macadam.—Granite, including steam rolling, watering, sand for binding, &c., exclusive of foundation and excavation, which may reach 4s.	...	...	...	...	...	...	0 3 0	1s.	The cost of repairs includes maintenance.	4d.
		"Chip" or rubble pavement.	...	...	...	...	...	...	0 2 8	...	...	...
		Random blocks.	...	...	...	...	...	...	0 3 9	...	...	...
Messrs. John Mowlem & Co.	Grosvenor Wharf, Millbank, S.W.	"Blocks" (or "Setts") with concrete.	...	...	...	0 3 3	...	...	0 11 0 to 0 18 0	3d.	...	3d.
		Blocks, without concrete.	...	...	...	...	...	...	0 9 0	3d.	...	3½d.
G. H. Stayton, Esq., C.E., Surveyor, Chelsea Vestry.	King's-road.	Wood blocks, with concrete foundation.	...	...	...	0 3 3	0 6 0	0 3 0	0 12 3	1s.	...	3½d.

N.B.—Some of these Modes of Paving are Patented. When concrete is used there should be an interval of ten or twelve days allowed for the concrete to set, if it is practicable to spare this time. The above prices will, of course, vary from time to time as the cost of materials varies.

WOMAN AS A SANITARY REFORMER.*

I STATE at once that the training required is simple,—beyond simple; that every woman who wills to go through it may go through it, and may become mistress by it of the destinies of the world. Not the Fates themselves were more the mistresses of the destinies of the race than the women of an educated commonwealth, who were conversant with the art of the prevention of disease and premature decay. A woman should master physiology so far as to understand the general construction of the human body. She should be rendered fully conversant with the different changes of food that are required for the digestive process in different periods of life; the extent to which the digestive powers should be taxed in infancy, childhood, adolescence, maturity, first and second decline, and old age. She should be made aware what substances, taken as food, are of real and what of spurious quality. She should be taught the relationship which solid foods hold to liquid foods or drinks. She should be told what drinks are foods, and she should specially understand what are the particular foods required for the young during the periods of active growth. In illustration of the value of this last-named fact, it may be stated that if women only knew what foods were requisite to feed the skeleton or bony framework of the living body while that skeleton is in the course of growth, and if she would act upon her knowledge, as she almost certainly would if she possessed it, there would hardly be one deformed child left in the land in one or two generations. Rickets, with all its attendant miseries of bowed legs, crooked spines, and humped backs, would pass away as if by the spell of an invisible enchantress. After the understanding of the digestive system, the woman should learn the principal facts relating to the circulation of the blood, and the blood itself. Nor should she, in respect to the healthy organisation, be less informed respecting that breath of life which is ever being breathed into the living thing by the Eternal Chemist, whose constructions and resolutions are the motions, visible and invisible, of His eternal universe. The complete structure of those breathing lungs should be as plain before her as the outward form of the things she knows best. Equally clear to her should be the leading facts bearing on that receptive system of the body into which the external universe transports itself, and from which, in reflex response, the acts of life, the expressions, the movements, the thoughts, return in wavelike repetition back again, to become themselves external phenomena, linked, as such, with all the visible universe. To the knowledge of nervous function it would be advisable to add to the store of elementary principles a few facts respecting the great glandular system of the body, and of those night and day labourers of the body, the muscles, the woman should learn sufficient to be made aware of the advantages of so training the muscles to work that they shall be daily exercised, shall not be subjected to over-strain, shall be equally subjected, as far as possible, to healthful labour. And of the bony skeleton, on which the muscular engines are laid, and which act as the passive framework and levers of the engine, she should gather enough information to be conversant with all its outlines of form and chemical construction. Lastly, the woman should attain so much instruction in reference to the great membraneous expanses as to know them also. She should learn the necessity of keeping the functions of the skin in due cleanliness and condition for work; so that the bath should be considered as one of the necessities of the daily life, like a daily meal of cleanly substance. The living house thus generally learned, the sanitarian helpmate for us who can do so little beyond our suggestion would be tempted to study until she completely mastered it, the mysterious construction of that deadly-lively house which, until lately, the architect and builder have pitchforked into street and square with facile and contented wisdom of wigwam descent. She would want to learn how the immaculate house is in every room provided with at least moderate ventilation. She would require to find out how most effectively and economically she can maintain in the varying seasons an even and equable temperature. She would aim to consider in what way she could keep the air of the house free of that most objectionable of mischiefs, dust. She would demand to have marked for her on a map or plan the precise position of every drain-pipe in the establishment, and would insist, with intelligent skill, on having every drain kept as systematically clean as the china in the housemaid's cupboard or the metal covers that make so many bright and effective pictures over the dresser of the well-arranged kitchen. She would see, not trusting to the mere word of any one, that those drains were properly ventilated so that sewer air could never enter the domain except as a burglar might enter, by special skill and violence, against which there is no absolute protection. She would learn enough of the chemistry of water to enable her to determine with as much facility as she could tell whether a looking-glass is clear enough to reflect back without fault the image of her face, whether a water was wholesome and drinkable; and she would have a sufficient amount of skill to direct how an impure water might be purified and made safe for her and hers to drink and use for all domestic requirements. She would see to it that damp had no place in any apartment. She would insist that where any living thing that ought not to be present in a house exists in it, that house is unclean, and in some way uninhabitable for health; since health will not abide with anything that is uncleanly. She would see to the biennial purification of the dwelling, as though a Passover were still a universal belief and practice. She would make the very act of cleaning and cleansing clean; she would make the very best places for cleaning and cleansing—the scullery, the landing, the bath-room, the laundry—the cynosures of the household. In the art of perfection, or towards perfection of health, the educated woman would in her domestic sphere bring her best energies to understand the selection, the purification, the preparation, and the administration of foods and drinks. As she would keep seeds of certain pestilence from her fold, or vulgar poisons that kill outright, and proclaim at once with loud voice, "accident, disease, or murder," so would she do her best to keep out those refined and subtle poisons which, in and under the name of strong drinks, bring silently more accident, disease, and murder into this inscrutable world than all the other poisons put together, unlicensed though they be, and so little liked by the exciseman that he would fly them any distance, the De'il himself in company, rather than so much as touch them with his divining rule. That she would acquire a thorough knowledge of the best art of cookery; that she would acquire a good knowledge in choosing foods in season; that she would become an adept in detecting actual wholesome from actual unwholesome foods; that she would find out what foods are most suitable for persons of different age and constitution; and that she would distribute food with well-balanced hand, neither feeding over indulgently nor parsimoniously, I take for granted. But I expect she would learn to do more than all these things in relation to food. She would be able better than any one to put to the test the experience whether it is good or necessary to go to the living animal creation at all for human food. I am in doubt. It does not seem to me that man is constructed to be a carnivorous animal. It does not seem clear, putting the anatomical argument altogether aside, that it can be good to go to secondary sources of supply for our food when Nature bountifully presents them to us from her prime source. It does not seem reasonable that we should employ millions of living laboratories for our daily food, and take the risks of disease which they in endless forms produce and propagate for us, when we can get all that is necessary without the chance of such production and of such propagation. It does not seem certain, when we know that the vegetable world is the original source of every particle of living food, and that carnivorous animals have to depend on the herbivorous for their supplies—so that carnivorous feeding is an anomaly rather than a basic principle of nature—it does not, I repeat, knowing these things, seem certain that the cost of the support of the living laboratories is justifiable on any ground except the extravagant process of making work that work may be at hand and employment procurable. Still I am not sure whether the secondary supplies of food for man from the animal world are or are not necessary, and that doubt it is in the *rôle* of the educated woman to solve. Her discernment, properly and eagerly directed, would soon settle whether those about her were injured or benefited by an exclusive vegetable and fruit diet. It has been one of the endeavours of my life to show that we living men and women make in our own corporeal structures a refined atmosphere, which I have called a nervous atmosphere, or ether,—an atmosphere which, present in due tension, distinguishes life; which, absorbed or condensed, distinguishes death; an atmosphere through which the external world vibrates and pierces us to the soul; an atmosphere which, pure and clear, brings us peace and power, and judgment and joy; an atmosphere which, impure and clouded, brings us unrest and weakness, and instability and misery. We make it from foods and drinks, and as we make it, it makes us. Go into the wards of a lunatic asylum, and notice amongst the most troubled there the odour of the gases and the vapours they emit by the skin and breath. That odour is from their internal atmosphere, their nervous ethereal emanation. They are mad; mad, we say, up to suicide, or murder, or any criminal folly. Can it be otherwise? They have secreted the madness; they are filled with it; it exhales from them. Catch it, condense it, imbibe it, and in like manner it would madden any one. See, from the study of foods, out of which the radiant or deadly atmosphere is made. What fields of discovery open to the mind. A mother, watching the effect of food on her gloomy, saturnine child, may detect how she can so feed it that the cloud shall pass away. Happy mother of a child! Far, far happier mother, perchance, of science and hope. In some great establishments for the insane so much gloom is secreted in the nervous recesses of human frames, that many times a day, but for excessive vigilance, some terrible hand would raise itself against itself, to kill itself. What if in a wiser day, however far off, the removal of that little cloud from a troubled child should show the way to the removal of those denser, blacker clouds which lower and create storms in human breasts, overpowering altogether the radiant nervous ether! What if from that minor event this greater one should follow! What nobler accomplishment of noble deed could woman perform, save and except when she is the mother of her kind? Women should know the correct names and characters of the more common diseases, and they should know, by sight, the every-day contagious or communicable diseases. All the best-known methods of preventing disease should be at their finger's ends, and the rule of the sick-room should be their faithful care. The woman should know everything about registering the temperature of the sick room and degree of humidity; the mode of ventilation; the different special methods of feeding, washing, and changing the sick; the most efficient means of disinfecting, and of removing or destroying the poisons of the communicable diseases. How, in this way, the woman could help the physician none but the physician can understand.

> "Truth may never be confirm'd enough,
> Though doubt should ever sleep."

I declare it again, that if, in the management and treatment of any of the acute and of many of the chronic diseases, you gave me, in this climate, absolute control of the fire and the window of the sick-room, I could determine the course of the illness. There is no department of practice more neglected, in respect to principles, than the management of offspring in its earliest youth. Love there is plenty of; admiration unbounded; rational systematic training the poorest that can be described. Women, in addition to instruction on all the points above-named, should understand the little appreciative law of temperaments; the nervous, the bilious, the sanguine, and the lymphatic. She should study the combinations of these, and she should observe how temperament influences health, taste, activity, and disease. From this she would learn how different natures would intermix in work or play, and what work, what play would suit the nature. The sanguine child, ruddy and red, with blue eyes, red hair, strong muscle, quick movements, restless limb, she may set to study at books, whilst she curbs exercise with no fear that books will kill, for it will outlive any book. The bilious child, with dark eyes, dark skin, black hair, stolid expression, thoughtful brow, she will not set to the study of books as the work of life; for books may kill; physical exercise may save, but will never be carried voluntarily to injury. The nervous child, with fair skin, light hair, blue eye, quick but feeble movement, timid glance, yet, perhaps, un-

* By Dr. B. W. Richardson. See p. 409, *ante*.

bounded ambition, she will spirit gently; will balance between physical and mental labour; will apportion excess of neither, and will never urge unduly to any effort. The lymphatic child, large of body, pale, with grey or blue eyes, brown hair, shambling step, watery lip, and slow determination, she will rouse to action both physical and mental, with the full assurance that neither effort will do anything but good. Beyond the study of temperaments, and the special dangers connected with them, she should devote her mind to the consideration of what the learned D'Espine has designated the mental contagions. She should study emotional contagion with especial care, and on one emotion, that of fear, she should keep the most watchful observation, because she will discover it to be the most common and disastrous of all contagions. She will never excite it for a moment by story of superstition or dread. Finally, in physical psychological training there would stand out for contemplation, and action founded upon it, one more subject,—that marvel of the marvellous in living phenomena, heredity of type and action, extending to health, and extending, alas! to disease in its deepest foundations. She should stand to resist with her full persuasive might that process which I have elsewhere called the intermarriage of disease. She will tell her sisters what that terrible process means. She will tell that diseased heredity united in marriage means the continuance of the heredity as certainly as that two and two make four; that madness, consumption, cancer, scrofula, yes, and certain of the contagious diseases, too, may be perpetuated from the altar; and that the first responsibilities of parents, towards the offspring they expect, ought to be, not how to provide for wealth and position over which they have no control, but that preliminary healthy parentage which is the foundation of health, and without which position and wealth are shadowy legacies indeed. Delicate ground, you may say. I admit the fact. But in a world in which those who study the living and the dead most carefully rarely see a man or woman hereditarily free from disease, even this ground must be entered on by the enlightened scholar. I touch on it here for the best of all reasons, that the subject it includes, affecting deeply the human heart in its sympathies and affections, is one on which the influence of woman, the arbitress of the natures that are to be, is all potent for good or for evil. To know the first principles of animal physics and life; to learn the house and its perfect management; to learn the simpler problems relating to the fatal diseases; to ordain the training of the young; to grasp the elements of the three psycho-physical problems; the human temperaments, the moral contagions with their preventions, and the heredities of disease with their preventions,—these, in all respect and earnestness, I set before this Congress as the heads of the educational programme for our modern woman in her sphere of life and duty. Let these studies be hers, and once more may be applied to her the promise of that wisest of men, with whose words I opened this discourse: "She shall rejoice in time to come. The heart of her husband doth safely trust in her." And,—sun and sum of all hopes, ambitions, happiness!—"Her children rise up and call her blessed."

CONGRESS OF THE SOCIAL SCIENCE ASSOCIATION.

The Congress of the Social Science Association was opened in Edinburgh on Wednesday last under promising auspices, and we shall, as usual, make our readers acquainted with the pith of such of the papers and discussions as may seem to be the most likely to interest them. The inaugural address of the president of the Association, the Right Hon. Lord Reay, was delivered on Wednesday evening, in the Free Assembly Hall. The Right Hon. John M'Laren gave his address as President of the Jurisprudence Department on Thursday morning; immediately after which the sittings of the various departments in their several rooms were opened.

Lord Reay's address was entirely political. The concluding two paragraphs, which we print, sufficiently show the purport of it:—

"If a Continental statesman asks me whether England does not yield too much to the instinct of isolation, I give him this answer: 'Isolation from your quarrels is absolutely imperative to us, but it is also the best thing we can do for you. England and her colonies will be a refuge to all who are tired of State despotism and of militarism, and who wish to live under another economy. Power, no doubt, has a tendency to lurk in your big guns, but happily, also, in strong brains. In your social condition the army and the bureaucracy absorb the best forces of the country. We prefer to see our strong brains at work, not only in the political and military spheres, but also in solving scientific and social problems, in literary and artistic work, not to mention theology and philosophy. Whether, in the long run, your system will not prove weak as against ours remains to be seen. All we ask is to be left alone. You cannot expect us to put our brains at your disposal, to do the work which your own brains are quite as fit to perform. While you increase the number of your officials and of your soldiers, we open new channels for our trade; we remove all that cripples the advance of education or of prosperity in the nation. You assimilate your citizens to some abstract ideal which you call State. We strengthen our position by adhering to independent, self-developed principles, which constitute the natural links between the English races. Our State is nothing but the result of a living and healthy organism, which does not receive its inspiration from Government offices, but which is left to evolve its own destinies by a number of influences, all of which escape our control. To the adjustment of these self-acting forces we do not apply our legal machinery, as you do. They are left to adjust themselves. We do not attempt to produce a law-made nation, which meets a Government functionary at every turn. The person in England whose absence would probably be more felt than that of any functionary is the boy who sells the penny newspaper. Whether it is a better thing that a nation should be guided by uninspired writers, by leaders of various schools of thought, than by the depositaries of the secret of the State ideal, may well be left to the future to determine." The Anglo-Saxon world is a planetary system in itself. It moves in its own orbit. The voices of Anglo-Saxons all over the world murmur with no uncertain sound what is the duty of English statesmen. Do not seek, they murmur, to adjust the balance of power. Do not attempt to meddle with the internal constitution of other States. Do not pretend to be arbiters of the destinies of the world. Do not enter into engagements which are not imperatively required. Do not fetter in any way our freedom, unless freedom itself is threatened. Prevent any attack being made on the independence of the weaker States of Europe. Promote concert whenever and wherever you can, leaving the responsibility to those States who decline to co-operate for a good object, and to ward off perils. Increase the fund of prosperity to be distributed among her Majesty's subjects in England, in Canada, in Australia, in India, in Africa. Let England and Scotland continue to be,—what they have never ceased to be,—Parent Homes. Increase their attractiveness, that they may always be looked upon with filial affection. Wherever we go, the end and aim is to return to our English home. Guide and control our generous impulses when we might be committed to rash courses. Extinguish old abuses and prevent new ones from cropping up. Invigorate the social system where it shows decay. Remove the obstacles which stand in the way of genius. Give us knowledge for growth, as has been forcibly said. Recognise individual merit wherever it is found. Elevate, not the State, but the individual citizen, who by individual effort strengthens our social system. The respect paid to our scientific men, to our men of letters, to our artists, we consider ennobling to the national life. The great trust we have committed to you is one of constant watchfulness. '*Vigilate, Deo confidentes*,' should be your and our motto. We do not wish to establish a cementing bond of union for Anglo-Saxon greatness other than that which we have inherited from our ancestors: a stanch, brave, and deliberate obedience to the precepts of liberty, which are never antagonistic to cautious progress; and cautious progress alone is uninterrupted progress."

The address of the President of the Health department, Dr. John Beddoe, will be delivered on this Saturday morning (the 9th), and that of the President of the Art Department, Professor Richmond, on Tuesday, the 12th.

THE JOSIAH MASON SCIENCE COLLEGE, BIRMINGHAM.

The opening of this important building was celebrated on Friday, October 1st, when an inaugural address was delivered by Professor Huxley. The first stone was laid on the 23rd of February, 1875, and the building has been erected from the designs and under the personal superintendence of Mr. Jethro A. Cossins. We give a view of the college and plans of the ground-floor. Not long ago we printed some particulars of the structure, but it will probably be thought convenient if we now describe it pretty fully at the risk of repeating what has been said before. Of the admirable founder's remarkable career we spoke in our last number.

The site on which the college stands extends from Edmund-street to Great Charles-street, and comprises about an acre of land, with a frontage of 150 ft. to the former thoroughfare, and a depth of 133 ft.; but only about half the ground is at present covered with buildings. These are arranged around two quadrangles, the main block fronting to Edmund-street, and a range of buildings of about the same bulk standing parallel with it at the rear. The two are connected by east and west wings, and by a covered central corridor and out-offices, which divide the enclosed space into two open courts, each of ample extent for the purposes of light and ventilation. With the exception of the east wing, all the buildings are four stories in height, and in the centre of the principal façade a large museum has been provided, partly in the lofty roof. The whole of the walls are of brick and stone. For the front in Edmund-street an excellent deep-red brick from Kingswinford has been employed, with Portland, Bath, and Bolton Wood stone for the windows and other details. The elevation is symmetrical, having the principal entrance in the centre. It is in the thirteenth-century style, with details of a somewhat French character. The ground-floor is raised 7 ft. above the street level, and a massive plinth of Bramley Fall stone is carried to this height. It is somewhat unfortunate that the space in front of the college is only partially-open ground, so that it is impossible to get a full view of the whole structure. The college is entered by a deeply-recessed arch, with shafts of grey York stone. Their bases stand above the plinth, and thus the mouldings and all details liable to damage are placed above the reach of injury from accident or otherwise. The entrance is closed by handsome wrought-iron gates, sliding into grooves in the jambs. Over the gateway projects a stone balcony, above which is an elaborate oriel window, of two stories in height. The lofty central gable, against which the upper part of the oriel abuts, is terminated by a mermaid,—the crest of the generous founder of the institution, at a height of 122 ft. above the pavement. All the windows,—and there are sixty of them in front of the building, besides the dormers and oriels,—have geometrical tracery within recessed arches, with moulded and shafted jambs, the latter having carved capitals. A stone balcony extends along the whole of the front, at the level of the roof, and is stopped at the angles of the several blocks by octagonal turrets, carried out from the lines of the front on moulded corbels. On the façade at various points are carved the arms of Birmingham, Warwickshire, Worcester, Worcestershire, and of Sir Josiah Mason. The roofs, which are of a very steep pitch, are red-tiled, and are pierced by dormers.

Entering the college by the groined porch, which has moulded ribs, resting on dwarf columns, with carved capitals, the spaces between the wall ribs being filled with geometrical tracery and carved spandrels, the visitor finds a central corridor, about 100 ft. long by 8 ft. 6 in. broad, with transverse corridors branching to the right and the left. The latter conduct to the offices connected with the administration of the college, a room allotted to the Natural History Society, and two professors' rooms. The side corridors turn northwards along the wings of the building. In the eastern wing there are two rooms and a class-room for the use of female students, and in the western two class-rooms and an assistant's room for males. These rooms, which are about 15 ft. square, have windows looking into the quadrangles, and also receive light from the corridors. The corridors end in smaller doors to the apartments in the northern main block, to which, however, the principal approach is by the central corridor. Proceeding along the latter from the entrance, the

visitor first passes on his right the handsome main staircase from basement to top, which opens from the corridor, and is divided from it by an arcade of moulded arches, resting on polished Aberdeen granite columns, with carved capitals. A door opposite leads to cloak-room, lavatory, &c. The windows of the corridors and staircases throughout are of stone, with shafted jambs, carved capitals, and moulded arches. There are also staircases at the extremity of the transverse corridors communicating with every story, and descending into the basement.

At the extreme end of the central corridor are two fine apartments, each 48 ft. by 30 ft. The one on the right is the library and reading-room, and has behind it an ante-room, which can either be used as a place for conversation or as a separate reading-room for ladies. The room on the left is the physics laboratory, fitted with every requisite. It also has an ante-room, which is set apart for apparatus, and a dark room for spectroscope studies. The western corridor is continued past the end of this room along the annexe, which projects further towards Great Charles-street, and in which are provided a workshop and two rooms, at the disposal of the professor of physics.

On reaching the first floor by the principal staircase, a short turn to the left conducts to the rooms facing Edmund-street. The chief and central room is the chemical-lecture theatre, 49 ft. by 33 ft., fitted with seats tier above tier, for the accommodation of 155 students. The male students will occupy the lower half, and the female students the seats above and behind them, a separate entrance being provided for each sex. The arrangements for the convenience of the lecturer or demonstrator are complete. He has a long table fitted with sinks, mercury-bath, down-draught flues (to carry away the noxious fumes that may be evolved in any of the demonstrations), and taps supplying hydrogen gas, oxygen gas, and water, with improved arrangements for regulating the supply. In the wall behind the lecturer is a niche, closed by a shutter, for the purpose of receiving preparations and appliances from his assistant in the ante-room, with which it communicates on the other side. There is also a glazed niche, with stench-flue over, in which any process may be carried on in sight of the students. The theatre is admirably lighted, but can in a few moments be rendered dark by the drawing of opaque blinds, with which the whole of the windows are furnished. Reference has already been made to the ante-room for the lecturer's assistant. This is a large apartment, furnished with slabs, sinks, stench-flues, and everything which could be desired for the preparation of chemical experiments and demonstrations. Behind this there is another room, in which what are called chemical collections may be permanently kept in readiness. Leaving the lecture-theatre by a door at the top of the auditorium, there is a class-room for electricity and another for magnetism, &c. These complete the front rooms on the first floor. In the west corridor are rooms for the biological professor and demonstrator, and adjoining them is a room for models employed in the biological department, which occupies the adjoining end of the north block. The corresponding corridor on the east side is that giving access to three rooms to be used for apparatus and other purposes in connexion with the physics department. The first floor of the north main block is occupied by two other lecture-theatres,—one for biology and mathematics, and the other for physics; the latter 47 ft. by 30 ft., and the former a little smaller, with preparation-rooms at the end of each. The biological department is the one nearest the projecting annexe mentioned in the description of the ground-floor, and in this are provided a biology workroom and museum.

The second-floor, or top story, is principally devoted to the chemical department, for which the arrangements are of the most extensive and complete kind. A large room, 52 ft. by 33 ft., in the front of the building, over the chemical lecture theatre, will be used as a general assembly and examination room. The window of this room is the oriel, which forms such a conspicuous feature in the façade; it is a lofty well-proportioned apartment, and will be available for meetings of scientific societies. Upon one side of it are the private study and private laboratory of the chemistry professor, fitted up with every requisite for research; and on the other side are rooms for the curator of the museum and for class purposes. The laboratories are situated end to end in the north block or back range, and are lighted both by windows and skylights. These measure together about 104 ft. long by 32 ft. wide, and are divided by a screen in the centre. The larger laboratory is for qualitative analysis, and the smaller for quantitative. The arrangements have been the subject of great thought and investigation by the architect, with a view to render them as complete and well-devised as possible. In the qualitative laboratory there are four double operating-tables, fitted with sinks, gas, and water for forty students, and there is a large unencumbered table in the middle of the apartment for long trains of chemical apparatus. The sinks at the tables are drained into depositing-tanks, where valuable deposits are retained. Along the walls are ten niches for operations giving off fumes, each provided with a flue, which rapidly carries off the vapours produced into the outer air. There are slabs at each window for investigations requiring a large amount of daylight, and shelves are arranged along the walls with all the reagents required by the students in their investigations. At the end of the laboratory are slabs and ovens for drying purposes. The laboratory for quantitative analysis is a little shorter than the one just described. In addition to fittings and appliances similar to those in the other laboratory for thirty-two students, there are two large ventilated niches lighted from the back. There is an extra room in the annexe for gas analysis, another for delicate weighing operations, and a room for the demonstrator. The western wing is not carried above the first-floor, but the eastern wing affords accommodation for a chemical reference library and reading-room, a room for combustions and fusions, and a steward's store-room. From the latter the students will be able to obtain all the apparatus they may require, on leaving a receipt with the steward.

In addition to the floors previously described, over the third floor, in the centre of the front block, is a large and lofty room, with open timber roof, and partially lighted from the top, intended for use as a museum. The basement story, extending under the whole of the ground-floor, is lofty and well lighted, and contains store-rooms.

The ventilation and warming of the college are upon an improved and effective plan. Near the centre of the area rises a very large chimney-stack to a height of about 160 ft., and it is divided into three flues by thin partitions. The central flue carries the smoke from the boiler, and heats the air in the adjoining flues, which are used for ventilating the lecture-theatres. The pipes from the fume-niches in the chemical laboratories also communicate with the stack by means of a horizontal flue round the walls. The warming is effected by a coil of pipes, containing 4,475 superficial feet, placed in a vault in the sub-basement. These are warmed by the water from the large boiler, and the air from the courts, passing over the pipes, is conducted by flues to every room in the building. In summer, cold air is admitted into the rooms by the same means. The drains are ventilated into a separate flue, carried up into the main shaft. Another important feature is the lavatory accommodation, which is ample and complete, there being cloak-rooms and lavatories on every floor opposite the central stairs, while the larger number of closets are in the yard beyond, and entirely cut off from the main building. A lift runs through all the floors for taking up stores and other things, and there is also a common shaft carrying the gas and water pipes, the junctions to which are easily accessible upon each floor. There are about one hundred rooms in the college, and 370 windows, while at present about 8,000 ft. of gas-piping have been used.

Sir Josiah Mason has built the college, and has furnished its various departments with the necessary fittings entirely at his own cost, so that the resources of the trustees remain untouched. Mr. J. A. Cossins, as his architect, has devoted himself to the work.

The building has been erected without making a single contract. The architect himself laid out the work, engaged and superintended the workmen, and saw personally to the execution of every detail. Mr. Hodgkiss was his manager; the stonework has been executed by Mr. Prothero; the carving is by Mr. J. Smith: Messrs. Camm, Brothers, have supplied the ornamental glass; the gasfittings are by Messrs. R. W. Winfield & Co.; the wrought-iron entrance-gate is by Messrs. C. Smith & Sons, Deritend; the painting by Mr. Potter; and some of the movable fittings by the Midland Joinery Company; the rest, including the fittings of the lecture-theatre and laboratories, having been made in the college workshops, under the superintendence of the architect. The furniture for the trustees' room and the assembly-room has been made by Messrs. Marris & Norton; and other rooms have been furnished by Messrs. Chamberlain, King, & Jones, and Messrs. Manton & Sons.

The building will probably cost about 60,000*l.*, and the income from the endowment is from 3,000*l.* to 4,000*l.* a year.

The trustees have power, we are glad to say, to make provision for instruction in art as well as in science; and by a supplemental deed they are authorised to include in the course of study certain subjects requisite for the training of medical students.

NEW BUILDINGS AND EXTENSIONS AT PAINTERS' HALL.

Painter-Stainers' Hall, in Little Trinity-lane, is in the hands of the builders. The existing building, which replaced the old hall,—destroyed by the Great Fire of London,—is said to have been erected and first opened in 1669, being thus 210 years old.* The principal frontage of the hall is in Little Trinity-lane, but advantage is being taken of the inclosed open area above the Metropolitan District Railway, on the north side, to put a new face on the ancient structure, visible from Queen Victoria-street. This new elevation is built with red brick, the style of architecture being of the Queen Anne type. The frontage is surmounted by a large central pediment, with the arms of the company carved in red brick. Two lofty arched windows, in three divisions, on the east and west sides of the frontage respectively, are intended to be filled in with stained glass, containing the arms of all the past masters of the company. This new frontage will form the north side of the dining-hall of the company, which is being enlarged in that direction to the extent of about 12 ft., and when completed this apartment will be about one-half larger than its present size, and capable of dining between 300 and 400 guests. The restorations likewise include a new roof, immediately over the Little Trinity-lane frontage.

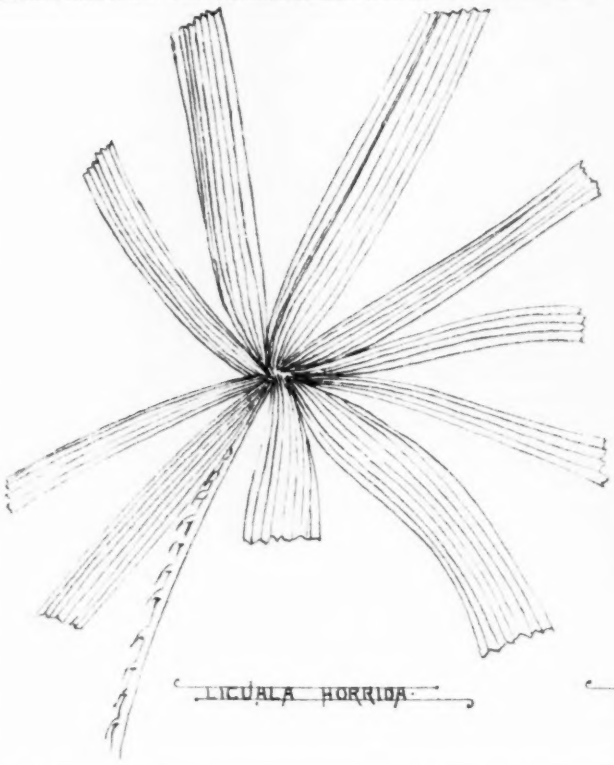
Mr. Edis is the architect, and the contractors are Messrs. Watson, Brothers, of Charlotte-street, Portland-place. Mr. Thorn is clerk of the works.

THE WIDENING OF COVENTRY-STREET.

The Coventry-street improvement project will now shortly be carried out, when this West-end thoroughfare will be considerably widened on the south side, from Whitcomb-street, near Leicester-square, to its junction with the Haymarket, so as to make it about 60 ft. in width, and bring it into direct line with Piccadilly. A few weeks ago the materials of the whole of the houses and shops which are required to be taken down in order to carry out the improvement were sold, and the site upon which they stood is now almost cleared. The property cleared away comprises nearly thirty houses and shops in Coventry-street, Oxenden-street, Princes-street, Whitcomb-street, and also four large houses and shops and other places of business on the east side of the Haymarket. Of the entire area occupied by the four separate buildings in the Haymarket which have been taken down for the improvement, the site upon which two of them stood, at the angle of Coventry-street and the Haymarket, will form part of the widened thoroughfare, whilst the two houses which joined them, lower down in the Haymarket, will be rebuilt. The improvement will likewise lead to the erection of a superior class of buildings on the south side of Coventry-street, set back in the direction of Oxenden-street, Princes-street, and Whitcomb-street respectively.

An Old Workhouse.—The proposal that the Salisbury City Workhouse should be razed to the ground, and in its place a choir chapel be built by the Dean and Chapter of the cathedral, has met with considerable opposition from the Society for the Preservation of Ancient Buildings. Audley Hall, the building in question, dates back to a period earlier than Henry VII., and is noticeable as a fine example of ancient Domestic architecture.

* Some particulars as to the rebuilding of the Hall, together with some notes of the company's history, will be found in our last volume, p. 678.



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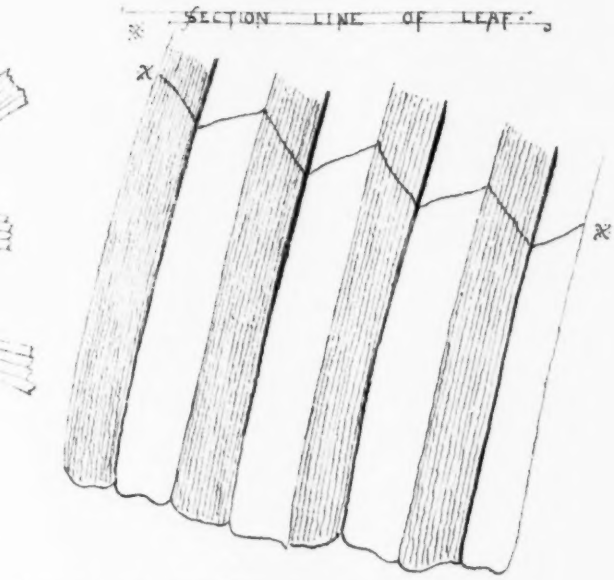
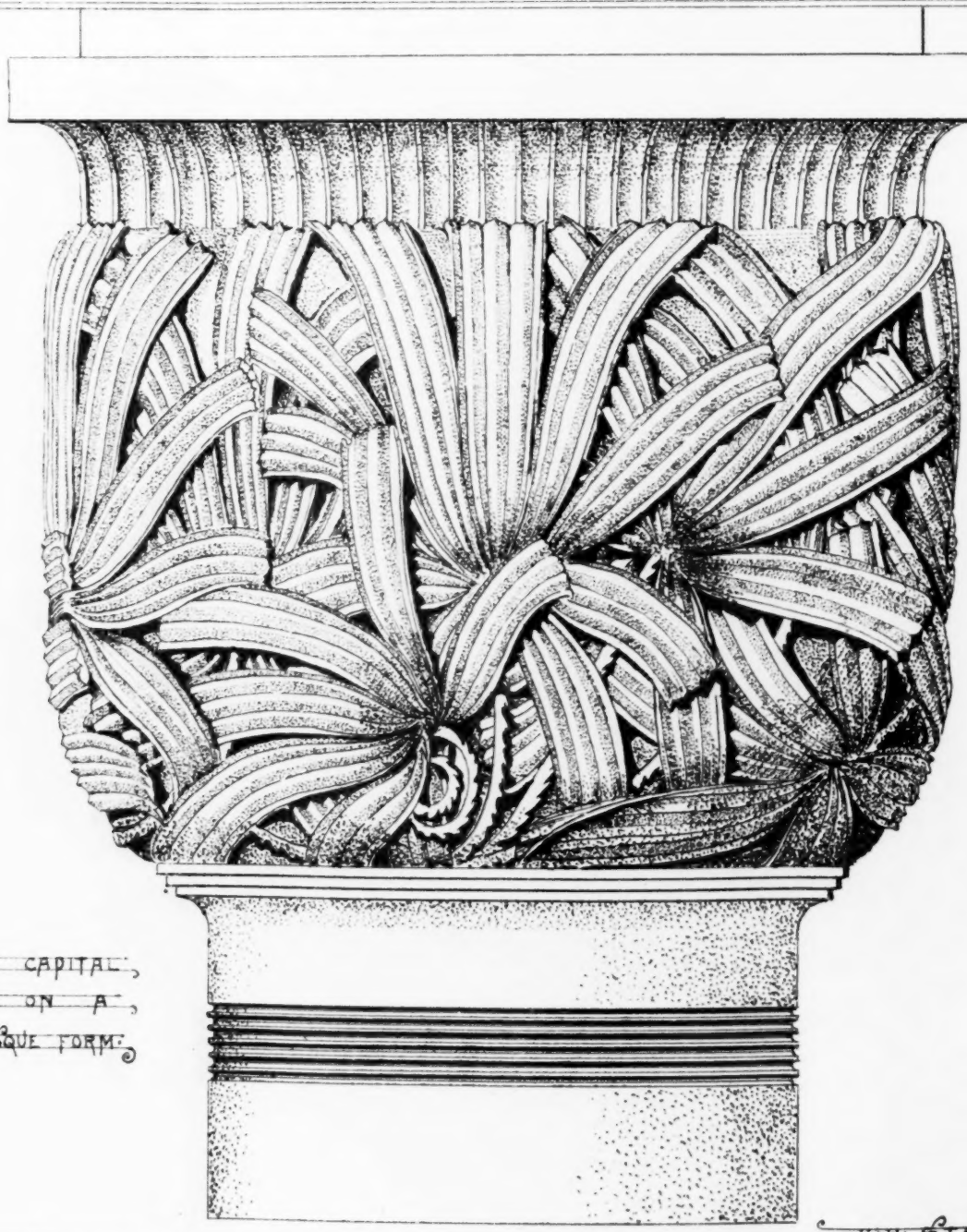


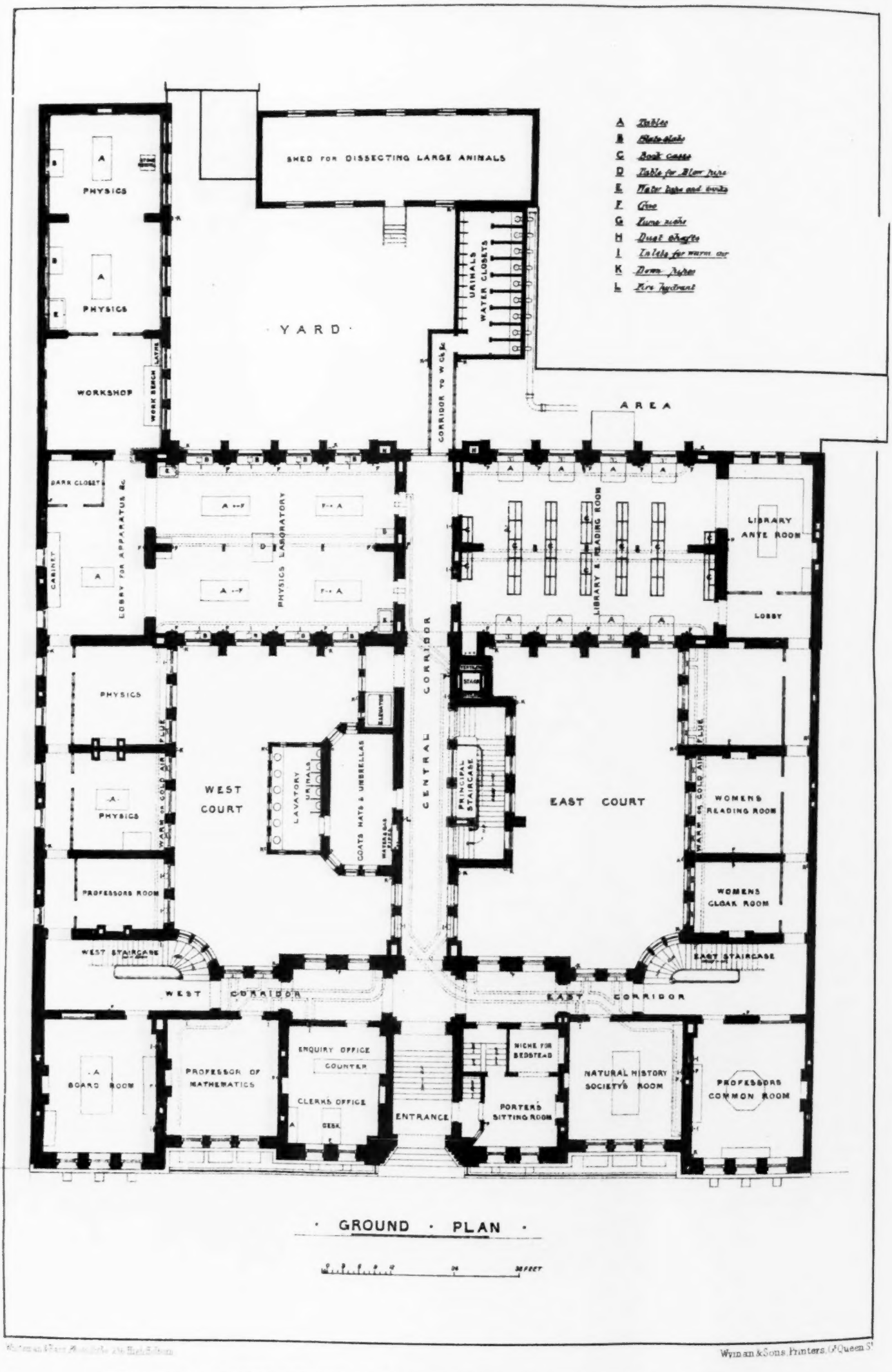
END OF LEAF · FULL SIZE.



MARBLE CAPITAL BASED ON A ROMANESQUE FORM.

H. H. STATHAM.

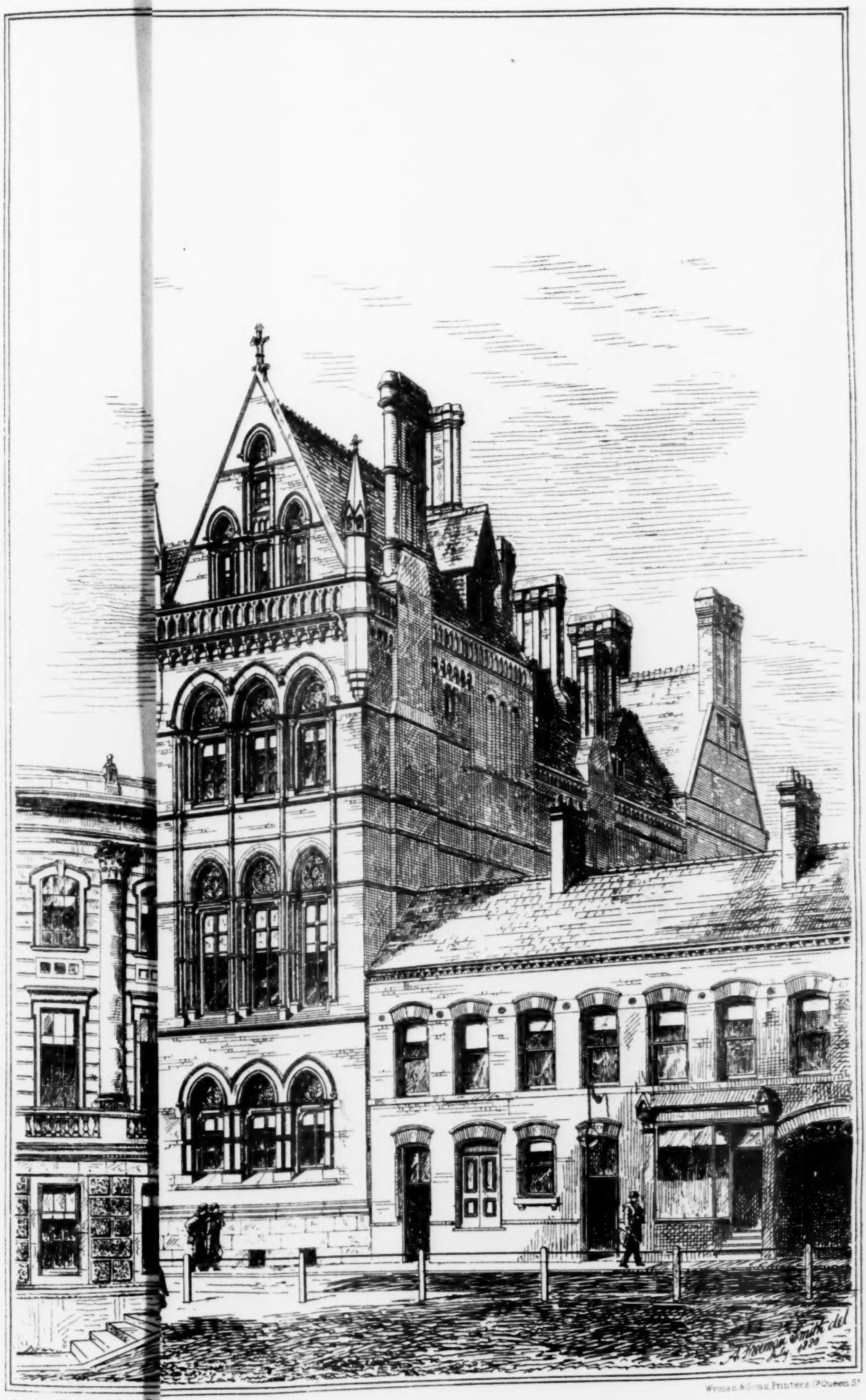
DECORATIVE SUGGESTIONS FROM NATURAL FORMS. — No. 1.



GROUND PLAN

Wyman & Sons Printers, 74 Queen St

THE JOSIAH MASON SCIENCE COLLEGE, BIRMINGHAM.——Mr. Cossins, Architect.



Whitman & Bass. *Photo Litho.* 216 Pearl

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s, ARCHITECT.

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THE JOSIAH MASON SCIENCE COLLEGE, BIRMINGHAM.—Mr. Cossins, Architect.

THE BULLETIN SEP. 8, 1888

Waterlow & Sons Photo Litho 256 High Holborn

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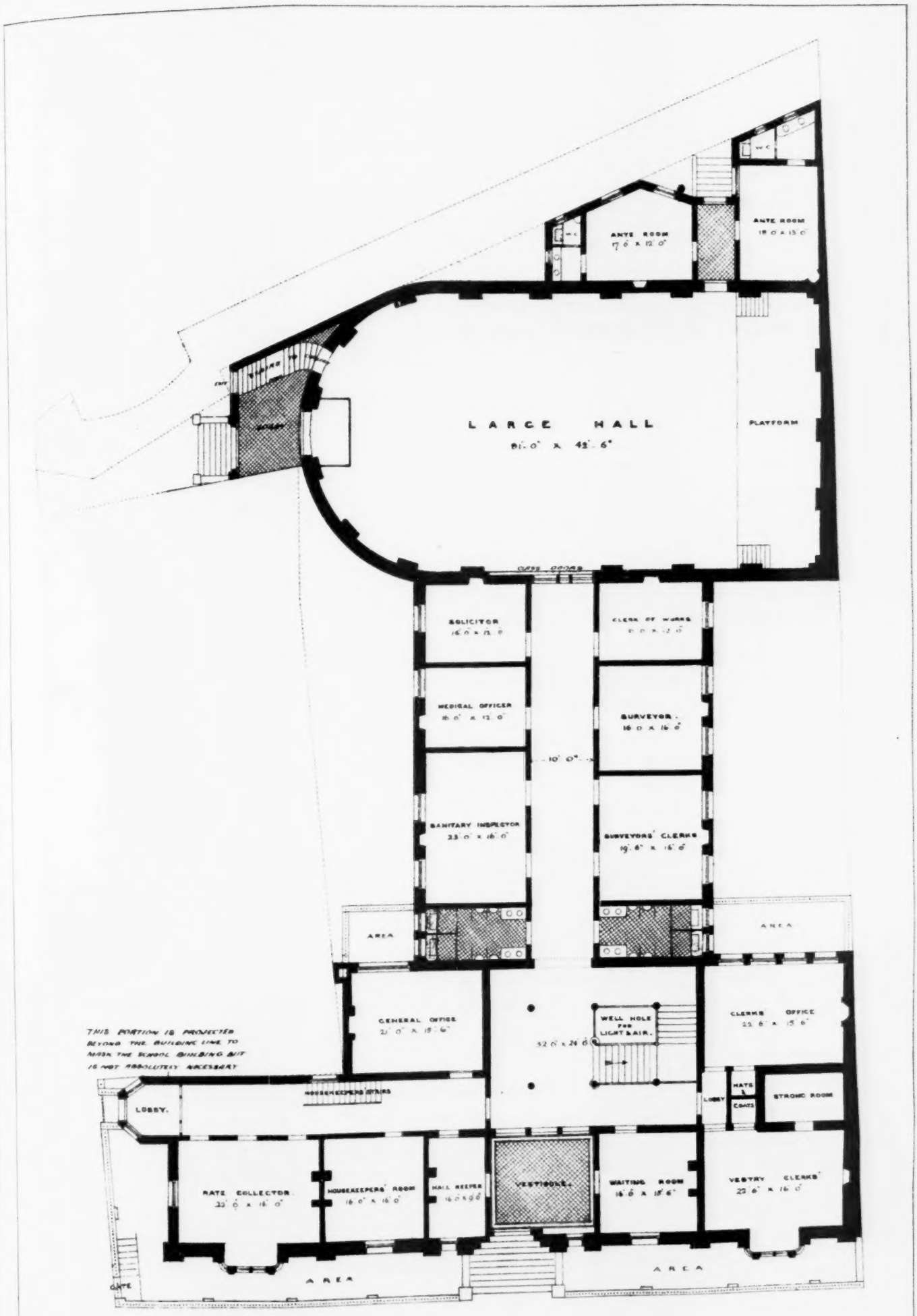
WESTMINSTER PAROCHIAL OFFICES.—Design by Messrs. Lee & Smith, to which First Premium was Awarded.



DESIGN FOR WESTMINSTER PAROCHIAL OFFICES.—*Plan of Principal Floor.*

Wyman & Sons, Printers, Fetter Lane, E.C.

Bierman & Sons, Photo-Litho, 256 High Holborn.

DESIGN FOR THE WESTMINSTER PAROCHIAL OFFICES.

We illustrate the design for the Westminster Offices, by Messrs. Lee & Smith, architects, to which the first premium was awarded; giving the principal elevation and plan of the ground-floor. We append some of the particulars given by the architects themselves to explain the design. They say they have considered the vestry-hall the most important matter, and have placed it in a position where the deliberations can be carried on in quietude and free from the noise of the streets. It is lighted by windows on three sides, the dimensions of hall being 49 ft. by 44 ft. and 25 ft. high, with a gallery at one end for strangers, and a retiring-room on the same level as the gallery, which is over the hat and coat room. The hall is approached by a staircase with steps 6 ft. 6 in. wide, rising from an inner hall, 32 ft. 6 in. by 24 ft. 6 in., lighted and ventilated by a lantern-light. This staircase also gives access to the committee-room, 42 ft. by 22 ft. 9 in. and 20 ft. high, the two smaller committee-rooms, the library, room for deputations and strangers' gallery, the hat and coat room before referred to, and the lavatories and conveniences.

The library, or members' tea-room, is provided with a serving-room in connexion with the housekeeper's stairs.

The ground-plan shows the chief entrance in the centre of the main front in Little Charles-street, by a vestibule, 16 ft. by 16 ft., on one side of which is the hall-keeper's room, and on the other a waiting-room, so that any person entering comes immediately under the notice of the hall-keeper. Both these rooms communicate with the large inner hall and corridor. Opposite the entrance, and across the inner hall, is a corridor, 10 ft. wide, on either side of which are the offices of the surveying, sanitary, and legal departments. On the left of the main hall is a corridor, 8 ft. wide, in which are the following rooms,—First, the hall-keeper's room, then that of the housekeeper, and opposite these the gas-testing office, and at the further end the rate-collectors' room, with separate entrance and waiting lobby.

It will be seen, by looking at the ground-plan, that the departments are divided into three:—1. The vestry clerk; 2. Surveyor, medical officer, and solicitor; 3. The rates and gas.

The large hall for meetings of the ratepayers is provided at the back, and will in this position afford room for 1,000 persons, this being the number suggested in the instructions.

The principal entrance to the hall will be from the main front, directly down a corridor, 10 ft. wide, with additional entrance in Gardener's-lane, which, in the event of the hall being let on any special occasion, will render it entirely independent of the vestry-hall and offices should it be so desired. The necessary space for accommodating 1,000 persons cannot be obtained without a gallery: this can be formed at one end or by a gallery all round the room. The materials for the exterior would be bricks and terra cotta.

The entrance-hall, staircase, gallery, corridor, large committee-room, and vestry-hall will receive a certain amount of decoration to give them the dignity requisite for a public building.

The roofs of the front are carried up to give height and dignity to the building, surrounded as it is by high structures.

The small scale of drawing for the elevation failed so completely, the designers say, to show the details of the building, that they prepared one on a larger scale; and they further note that they have not made three elevations, as according to their plan only two will be seen: consequently a considerable saving would be effected, by using which the principal fronts could be rendered somewhat more ornamental than could otherwise be the case, having reference to the sum named for the cost.

Sir H. Bessemer and the Freedom of the City.—The Gold Casket, designed and manufactured by Mr. J. W. Benson, of Ludgate-hill, illustrates the process of the conversion from the raw material to the application of the steel. It is of solid English design, surmounted by a modelled figure of Commerce, standing between a stack of pig-iron and the converter. On either side of the rounded cover are vignettes (in *repoussé* work) of a L. & N. W. Railway Locomotive (entirely constructed of this steel, and standing on its steel rails) and of a steel-clad ship.

"THE PRACTICE OF AN ARCHITECT."

We took occasion, some time since, to point out what we conceived to be the errors and injurious tendencies of an article published in the *British Quarterly* and titled "The Profession of an Architect." In the current number of that periodical the editor has allowed a writer, Mr. Roger Smith, also to say something on the other side of the question, and it may be useful to reprint a portion of his article. In the first part of it the writer obviously follows some of our lines:—

A professional man is one who either with his hands or his brain does for the individual who employs him work of more or less consequence or difficulty which the employer cannot perform for himself. A profession seems to have been so called to signify the fact that the person holding it professes or puts himself forward as an expert in some one thing. For example, the profession of law, of arms, of medicine is taken up by men who profess themselves skilled in law, in warfare, or in the healing art. An architect professes to be able to advise about buildings and to represent his employers in conducting the erection of buildings; that is to say, to design, superintend, and direct them. And before we can talk of the fine art of architecture, it is indispensable that all relating to contrivance and construction is first fully provided for. Many buildings, indeed, make no pretension to be called works of art, and in the strictest sense of the term are not architecture; for although all architecture is building, it by no means follows that all building is architecture; but even for such works the experience, the skill, the scientific attainments, and the business tact of the architect are as much required as where there is also an intention to aim at producing artistic work.

In the works which make undoubted claims to be our architecture in the most rigid sense that can be attached to the term, we do not find anything that exempts them from the conditions already laid down. Cathedrals and churches equally require to be planned, drawn out, estimated, contracted for, superintended, and paid for, and there is nothing in their nature which places them in these particulars in a different category from common buildings. When it is complained that architecture has become a profession, the complaint is as unreasonable as though it were directed against the medical or the legal profession. It is a more reasonable ground for both complaint and regret that architecture is sometimes attempted by men who are by no means competent to act as professional advisers. Persons of undoubted ability as draughtsmen, but not otherwise qualified, have sometimes obtained the position of architect to a building, and naturally enough have landed the undertaking in difficulties financial or structural, or both.

The unfortunate facility with which any one may assume the title of "architect," and the chances left open to all comers by the competition system, have together occasionally enabled such men to secure works of considerable importance and prominence. The result has often been severe disappointment and pecuniary loss to the employer, and sometimes complete disaster to the so-called architect, and has unfortunately reflected discredit upon the profession for which he had not fully qualified himself.

It may be assumed, however, as a point which few persons will venture to contravene, that whatever be the artistic excellences of the buildings to which we give the name of Modern Architecture, they must, if they are to be built at the present day, be designed and erected by persons capable of working under such conditions as those just laid down, and not apt to run counter to them. And it is only so far as the profession of the architect is adapted to the conditions under which it has to work that it can fulfil its duty to the public. The nature of that duty, often exceedingly arduous, and never unimportant, may have been to a large extent inferred from the statements already made; but perhaps a slight sketch of the ordinary routine of an architect's usual procedure in connexion with a building may not be out of place.

The first duty of an architect in connexion with a new work is to inform himself exactly as to what is wanted. The variety of the objects for which buildings are required makes very large demands upon the intelligence, the adroitness, and the training of the man to whose lot it falls to design them. An architect has to be quick at seizing the essential idea or ideas upon which his building depends for its success as a contrivance; and he must be sure as well as quick. This kind of insight is only acquired by practice and training, and were there no other reason why an architect must be a man of good special cultivation as well as good natural abilities, this part of his work is in itself sufficiently difficult to require an accomplished specialist.

The design, in its earlier stages, rather implies than sets forth much that will have to be foreseen and provided; but from the first its author ought to be able to see that it is capable of being carried out in all its details, whether of arrangement, construction, artistic design, or cost; and as he advances, he has to grasp all these matters and hold them, so to speak, in a strong grip; for if any one of them escape him, his work is likely to prove unsuccessful.

The design of a building is, moreover, not complete, even if its arrangements are such as to make it fit for its intended use, unless it be thoroughly sound, stable, and well considered as a structure. This requirement—a very wide one—calls for a knowledge of materials, their strength and nature, and the mode of putting them together; of foundations, and the modes of making them secure; and of the forces which are at work sapping the stability of structures, either by way of gradual decay or of a sudden and violent attack; and such knowledge the architect requires to possess, and is called upon to exercise, in a way which varies more or less with every building. It should be remarked, too, that the circumstances of the present day not infrequently call for close economy in the use of materials and the appropriation of space, so that the limit of stability is often unavoidably approached. Now, too, it is more often than formerly necessary to provide for a mode of occupation exceptionally trying to the fabric. Public halls, for example, with their crowded audiences, are, in modern towns, as a rule placed on upper stories, so that the safety of some thousands of people depend upon the provision of ample strength in the construction of their floors. Commercial and manufacturing buildings, again, are often made to support vast loads; the floors of others are crowded with heavy machinery in rapid motion, while such constructions are commonly built with an economy that verges on parsimony, so that it is essential to make them strong and secure without rendering them costly. This is not always, if ever, an easy task.

It has been pointed out that all the appliances and contrivances in use at the present day, and all the building material obtainable in every part of England and many foreign parts, are at the disposal of the architect, and that every portion of the country is open to him as his field. It is consequently necessary for him, if he is to be equal to his opportunities, to know something of the materials, the climatic conditions, and the local building customs of every part of this country; and this alone implies that much varied information has been got together such as is difficult to obtain, and can only be acquired by diligent personal search. The various mechanical and scientific appliances available in buildings also require to be understood. The architect should know which of them will suit his client's purposes, and should be able to secure that those which are selected for employment shall be efficiently and properly introduced. This involves no small knowledge of men as well as inventions; for it is not only necessary to know what contrivances are best, but also what artificers or tradesmen can be relied upon to construct or fix those contrivances in a workmanlike manner, and with a good prospect of their answering the end for which they are to be employed.

The part of the work done by the architect in his own room culminates in the preparation of a complete set of working plans and of a specification descriptive of the materials and labour to be employed. The undertaking then enters on another stage. The architect has to direct the negotiations, measurements, &c., which result ultimately in an arrangement with contractors or tradesmen who shall execute the work, and he then personally and by deputy supervises the carrying of it out to completion. During its progress he has to certify from time to time that such payments on account as are agreed upon have become due; and at its close it is his duty to settle and state the final accounts. Now it is of all things necessary for the successful discharge of these duties that the

architect should be a man of business, and that he should be strong enough not to be afraid of the people with whom he has to negotiate, and over whom he has to exercise control. How far an architectural draughtsman and a superior operative acting together,—the combination recommended in "The Profession," &c.,—would be able to obtain the necessary command over an energetic, unscrupulous, overbearing, and wealthy contractor may be doubted; yet if a man of that class obtains a building contract, it depends almost solely upon the architect's personal influence, straightforwardness, and independence to keep him in his place and to secure the due execution of his contract.

Above all things, the direction of a building operation requires the services of a man of upright, straightforward, independent integrity. The writer of the article under reply has permitted himself to insinuate that it is a common practice with architects to receive bribes, which he dignifies by the name of "sly percentages," from the tradesmen whose work they have to superintend. Either he is not in a position to know, in which case it is unjustifiable to bring such a charge, or he is in such a position, in which case a far more severe term ought to be employed to characterise what he must be well aware is a slander. That there are persons entirely unfit to bear the name, who call themselves architects, has been already admitted, and there can be no doubt that such people take all that they can get by fair means or foul; but men regularly occupying the recognised position of architects of respectability are as honourable as the members of any other profession. To be trusted and trustworthy is the first necessity of professional life. The present writer may, perhaps, be permitted to add that his personal experience confirms him in his belief that the sly percentages spoken of in the article are not offered,* as well as not accepted.

To judge by his language, the author of "The Profession of an Architect" seems to attach something like criminality to the very mode of payment always adopted. The custom has now become universal that under ordinary circumstances, and for the usual services, an architect charges his employers a lump sum equal to five per cent. upon the amount of money spent. For the public this is a very fair mode of making a charge, and the rate is moderate. No building worth attending to at all can well fail to reap advantage to the extent of at least one shilling in the pound from the skilled design and supervision under which it has been carried out. To the architect the payment is, on an average of his works, moderately remunerative. Occasionally it is good pay; often, especially in small intricate buildings, or in the case of buildings in remote situations, it is miserably inadequate; and there can be no doubt that architects would be gainers were this custom abandoned, and the habit of charging for the time actually expended on each work substituted for it. The advantage of payment by a lump sum is that, being known beforehand, there is little room for dissatisfaction or dispute; and rough though the method of assessing the amount undoubtedly is, there is in it substantial fairness. For an architect to reside at one work, and superintend it wholly, as the writer suggests, appears to be in no wise necessary,—at any rate, in this country,—now that railways and good roads have made every part of England easily accessible; nor is it quite certain that the result would answer the expectations of those who tried the experiment. Too much interference might possibly result from the presence of an active-minded man bound to one building every day, and all day long; and nothing so surely mars any undertaking as vexatious interference, however well-intentioned. To the suggestion that this resident architect ought to be an operative, I reply that, at present, so much of supervision as a working-man can give is given, and in a fairly effectual way to the carrying out of work, but not certainly to the design. The superintendence of every building is under the care of a foreman placed by the contractor or builder in charge of the work. He is an operative who has been marked out by his superior knowledge or intelligence, and who can usually understand the plans, and can direct the undertaking so far as materials, the employment of labour, and the putting together of the work are concerned. In most buildings of importance the architect is also represented by a permanent "clerk of works," who is generally a man of much the same sort as the builder's foreman,—that is to say, an intelligent operative. The practical knowledge and experience of one or other of these men,—or both together,—can generally be trusted in all matters that relate to materials and structure, but it is the rarest thing in the world for them to understand the science of construction or the art of architecture. The *meaning* of a moulding, a feature, or an ornament of any sort, seems beyond the grasp even of the operative who executes it; and the best workman rarely proves capable of anything beyond a mechanical adherence to a drawing. With the solitary exception of carvers in stone and wood, much the same may be said of all classes of operatives employed in building,—they seem rarely to possess any kind of artistic feeling in respect of the work they do, and never to be so informed as to be able to act as resident architects in the manner suggested in the article under reply. The most unsatisfactory results, from an art point of view, commonly follow the efforts of any artisan who has had energy enough to establish himself in a small way. The deplorable little structures, known commonly as "weekly property,"* seem to be the limit of the unassisted efforts of the artisan, turned master builder, in most instances; and how far these are from architecture let those say who are most familiar with them.

There appears no sufficient reason why, within fair limits, an architect who is able and skilful should not reap the reward of his abilities in the increasing number of his clients, just as a physician, when he becomes eminent, finds patients flock to his consulting-room. The parallel holds good in another respect; for as the fee of the young physician is not less than that of an established one, so architects of very different professional standing regulate their charge by the same percentage. It is quite true that when very numerous works are entrusted to the same architect much of the preparation of the drawings, and not a little supervision of the work, must be delegated, just as the carrying out of the directions of the physician is necessarily delegated to nurses and other assistants.

In the architect's office the plans which he originates are often, to a large extent, drawn out by assistants. This takes place under the supervision and control of their principal, with the constant addition of his own touches; and the work so done is virtually much the same as he himself would do, did time and opportunity permit.

The amount of personal work in the way of sketching and designing actually done with their own hands by many of those architects whose practice is the most extensive, is, however, enormous. The most busy architect of the present day is, in all probability, the one who has charge of the Palace of Justice now in course of erection in London. Yet it is his boast that all the working and detail drawings of this enormous pile are the work of his own hands, and, in addition, he is pursuing nearly the same course with all his other work. Whatever may be the idea entertained by the writer of "The Profession of an Architect" as to the assistance which he supposes is obtained from clever clerks, he may rest assured that the success of an architect of the present day depends, as a matter of fact, mainly upon his personal skill as a draughtsman. Four abler architectural draughtsmen could not be found in all England than the four gentlemen who, as Academicians and Associates, represent architecture in the Royal Academy,—a position the highest to which any architect can aspire. They are Academicians and Associates, however, not because of the excellence of their drawings, but of their buildings.

That which is most unfavourable to modern architecture is not the perfection of the methods placed at its disposal, but the absence of that universal and spontaneous effort which, during not less than four centuries, made architecture the foremost expression of popular energy, faith, skill, and feeling. Could we once more gather up into this one channel all the force of the most powerful minds in Europe, and leave them without science, and almost without literature, bereft of steam, without the printing-press, without great commercial or philanthropic undertakings, without other paintings or sculptures than works of a decorative character; could we, in short, force back the tide of time that has flowed on for five centuries, and then say to Europe, "Build; throw the best powers of your best men into this channel,"—we should soon find that human activity, administrative, structural, and artistic, concentrated into architecture alone, would infuse a vitality into that art beyond even the vigorous growth which we have witnessed in natural science in our own day. But it is not the part of sensible men to desire the impossible, and there is not the smallest reason to suppose that a return to what it is presumed may have been the methods in which the buildings of the Middle Ages were managed would ever (were it practicable, which it is not) bring us one inch nearer to spontaneous living architecture, unless we could make the whole age move back also.

The idea has been apparently entertained by the author of "The Profession of an Architect" that architects as a rule obtain their practice, or the bulk of it, by competitions; and this unknown, or at least unnamed, critic appears in his hostility to success to be willing to spread this delusion, for no other reason than that some architects who have succeeded in life have also succeeded in competitions. It is quite true that, owing to the prominence given to public competitions, and to the fact that every now and then designs for a really important building are obtained in this way, the subject is associated in the public mind with the practice of architecture. But the truth is that public competitions are resorted to for only a moderate proportion even of public works, and that the designs for all our best buildings, such, for example, as churches, banks, club-houses, and private dwellings, are rarely, if ever, obtained in this way. Men, who as public men, will resort to public competition because it is customary, or because it affords a chance of exercising a little nepotism undetected, or because it affords a convenient escape from the claims of rival architects, are far too shrewd to employ so imperfect and unbusiness-like a method when their own interests are at stake. Still, competitions do take place, and some few architects are frequently competitors, and many occasionally become so. But, we repeat, if it were not for the conspicuousness of competitions, they would not be much taken note of as influencing architectural practice. Even those architects who, having obtained an important building to erect through a competition early in life, have had an opening towards success made for them of which their ability and skill has enabled them to make use, will be found to have really only gained a very small amount of their life's work in competition; in short, nothing can be more untrue than the degrading sketch of an architect's position and mode of procedure given at pp. 335, 336, of the article.

A competition has this great defect, that it forces the architect and employer asunder at the very moment when they ought to be consulting together, and that each is placed at a disadvantage and induced to do his worst rather than his best. The employers make up their own mind among themselves as to what they are going to do at the very moment when they ought to have the opinion of an experienced and responsible adviser to tell them what is really within their reach; they then surround their proceedings with a thin veil of mystery which, on the one hand, makes steps that are in themselves perfectly innocent seem as though they were unfair, and, on the other, offers a ready cloak for any species of unfairness which it may be really desired to perpetrate. Meantime the architects, left to prepare their designs without proper consultation with their clients, are well aware that it is not what they themselves consider best, but what the committee consider best, that is likely to win the day, and are accordingly sorely tempted to launch out into projects far beyond the means really disposable. These evils are more or less mitigated by the employment of a professional adviser, and by some other departures from the stereotyped programmes; but the system has little to recommend it, and is much to be deprecated even at his best; and if it were at all as com-

* Twice, and only twice, in a course of practice extending over twenty-five years, and bringing me into contact with tradesmen of every sort and kind, has any such thing as a percentage been offered or even suggested to me by a tradesman. Were such offers customary, I must have had my share of them. During the last ten or twelve years I have been largely engaged as an arbitrator and a witness in cases arising out of building disputes. These have been varied and not seldom obstinate and angry, and in some cases it would have been to the advantage of one party or the other to disparage the architect; but I have never yet, in any case, heard proof given, or even a charge seriously made, that an architect had received a bribe from any tradesman or contractor, as I must have done were such percentage common.—T. R. S.

* Houses of which the rents are collected weekly, i.e., of the value of about 12s. 6d. per week downwards.

mon as it is conspicuous, might prove more seriously prejudicial to the profession of architecture than it ever has been or will be.

On the other hand, there can be no doubt that in many respects competitions do good to the individuals who engage in them. They offer an opportunity to many a young professional man, little if at all occupied as yet, of preparing designs for real buildings to occupy actual known sites, and to be built for definite purposes and under definite conditions. This is, if taken in moderation, not a bad training for actual practice hereafter, and there is enough of stimulus in the excitement and in the chance of possible success, remote though that chance may be, to induce a young man to do his best. Again, there is a freedom from the restraint of responsibility,—a restraint which often fetters the imagination of an architect sorely,—that sometimes acts like wine to the genius of men of true ability, and induces them to do their best. Competitions thus do actually from time to time become the stepping-stones across which an unknown and obscure artist of real power makes the first stage of his journey in life. In a few rare cases they have called forth the best powers of men of admitted talent and experience, but that has generally been when, as was the case in the competition for the Law Courts, the invitation is restricted to a few well-known names and the prize is a large one.

LARGE SALES OF BUILDING SITES IN THE SUBURBS.

Several sales of building sites on estates laid out for the purpose in different localities around the metropolis have taken place during the past week or two, there being in almost every instance an active demand amongst builders and others for the various sites offered.

On Tuesday evening, the 28th ult., Messrs. Protheroe & Morris submitted for sale, at the Prince of Wales Hotel, Wimbledon, eighty-eight plots of freehold building land, forming a portion of the Woodside Estate at Wimbledon. The several plots offered have frontages of from 20 ft. to 25 ft., with a depth ranging from 109 ft. to 144 ft. There was a good attendance of buyers, and most of the plots were sold, the prices obtained ranging from 5*l.* to 6*l.* per foot frontage. A large corner-plot, having a frontage to Gap-road of 123 ft. in length, with a depth of 90 ft. at one end, and 36 ft. to Alexandra-road, was purchased for 500*l.*, Mr. Shaw, of Tooting, being the buyer. This plot had been reserved by the vendors for an hotel.

On the following Thursday evening Messrs. Protheroe & Morris also offered for sale at the Castle Inn, Tooting, the first portion of an estate now converted into building land, but which has hitherto been known as the Exotic Nursery, at Tooting, situated in Garratt-lane, near the Balham and Tooting railway stations, and about seven miles from the City. The plots offered were thirty-four in number, having frontages to Fountain-road of 20 ft. by a depth of 100 ft. Considering the lateness of the season there was a good attendance, and most of the lots were sold, the prices obtained averaging about 3*l.* 5*s.* per foot frontage.

On the same evening Mr. R. J. Collier held an extensive sale of a similar character in a large marquee, specially erected for the purpose, at the Queen's Head Hotel, Green-lanes. It consisted of the first portion of the freehold building land, known as the Haringay New Park Estate, situated on the high road from London to Southgate, within a short distance of Finsbury Park and the Alexandra Palace, and described as advantageously placed within easy distance of four railway stations. The number of plots offered for sale consisted of 145, suited to different classes of purchasers. They varied in dimensions from 18 ft. to 22 ft. frontage, and from 70 ft. to 172 ft. in depth. Several of the plots are appropriated for shop purposes, and others for villas and houses of a moderate class. There was a very large attendance at the sale, and all the lots were sold at prices varying from 80*l.* to 140*l.* each, or at the rate of from 4*l.* to 6*l.* per foot frontage. The total proceeds of the sale amounted to 11,060*l.*

On Saturday evening last, Mr. F. M. Whittingham offered for sale at the Castle Hotel, Woodford-green, the first portion of the Woodford-green estate. The property fronts Woodford-green, and is in the immediate neighbourhood of Epping Forest. The number of plots submitted for sale was 61, having frontages of 20 ft. each, and a depth of from 100 ft. to 173 ft. All the plots fronting the green were sold, realising an average price of 7*l.* per foot frontage, or about 1,900*l.* per acre, and also most of those fronting Higham-road,—a new road made through the estate,—which realised 5*l.* per foot frontage, or 1,600*l.* per acre, the total amount of the sale being 4,059*l.*

DIRT, DISEASE, AND CRIME.

The Recorder of Dublin, in charging the grand jury at the opening of the Quarter Sessions on the 1st inst., referred to the intimate relation which subsists between the presence of unsanitary conditions and the existence of a heavy criminal calendar and a high death-rate. Having quoted particulars of the overcrowding of the city from the report of the Royal Commission which sat last year, he said:—

"We are responsible if we do not,—every one of us publicly or privately connected with this city,—labour to change it. I say deliberately that this state of things,—30,000 people living in the chief city in houses which have been condemned as uninhabitable,—a crime-rate and a death-rate so extravagantly excessive,—are subjects as deserving, far more deserving, imperial consideration than some of the burning questions, the alleged grievances, which are now shaking society through the length and breadth of the land. There are at least four things which must be done. I cannot detain you by stating my reasons here. There must be a revaluation of the city. The incidence of taxation at present is unjust; some property is overtaxed; a considerable portion has escaped taxation, and more still is taxed below its proper value. Secondly, there must be the co-operation of the central Government, at least to the extent of advancing the necessary loans, on exceptionally favourable terms as to the length of time for repayment, for it would be manifestly unjust to charge to the existing generation only the defaults of generations past. In the third place, there must be co-operation of the wealthy suburban townships, for the labouring poor of the city are the labouring poor not only of the city within the bounds, but the whole metropolitan district. In the fourth place, there must be the co-operation of private enterprise, as in Glasgow, where a somewhat similar state of things has been successfully coped with, and where the population displaced by the improvements were provided for by private enterprise, and that without loss. We cannot hope that all this would happen here. We have an Artisans' Dwellings Company, who have done much; but their operations must be necessarily limited, having regard to the work to be done. It may be a little wide of the mark to suggest here the co-operation of private charity; but all have heard of the great work in London for the homes of the poor effected through the beneficence of Mr. Peabody, and it is at least possible that, were the necessity widely known, some one would be led to act in the same direction here. At least, it is unjust and unreasonable for people simply to say, 'the question is one for the corporation, with which we have nothing to do.' No doubt the corporation, as the responsible authority, have the chief burden upon them, and they are already engaged, under the leadership of the Lord Mayor, in carrying out several of the suggestions in this report; but the Lord Mayor himself has stated that this evil of the tenement dwellings,—which is the evil of evils,—is one too gigantic to be dealt with by the Council in the present state of their finances, and those who ask the Corporation to do their duty must be prepared for the self-sacrifice of bearing a portion of the burden of supporting the Corporation in seeking the means by which alone it can be discharged."

AN ANCIENT BARROW IN WALES.

In connexion with the recent meeting of the British Association at Swansea, an excursion was made to an ancient barrow, discovered on Mr. Hussey Vivian's property at Park le Breos, in Gower. It was discovered, says Mr. Vivian, in 1869, under the following circumstances:—Up to that period no road existed in the valley. Finding that its beautiful grassy sward was much destroyed by the haulage of timber, I determined to make a road, and entered into a contract for its construction. Towards the lower end of the valley there was a heap of stones grown over with brambles and shrubs, and surrounded by a few ash trees. The contractor, finding that stones would cost him less from this heap than from the quarry, commenced its removal, and on doing so soon came on human bones. I was at once advised of the discovery, and on examining the place was convinced that it was a cairn. Soon afterwards, in August, 1869, the Cambrian Archæological Society met at Bridgend. I invited its members to come on to Swansea and assist at the opening of the cairn. Sir John Lubbock also kindly responded to my invitation. The cairn presented the appearance of a large heap of stones 60 ft. long and 56 ft. broad, with the top of one large stone protruding from the centre. The small stones were removed, when a carefully-constructed chambered tumulus was revealed, consisting of four lateral compartments leading off from a central passage, two at each side near the end, with a space between. The bearing of the central passage is nearly north and south; it is 18 ft. long by 3 ft. wide. It contained the bones of ten persons. The north-eastern chamber is 6 ft. long by 3 ft. 6 in. wide, and contained the remains of six persons; the north-western chamber is 5 ft. long and of irregular form, 4 ft. broad at the end and 8 ft. at the entrance. It contained the remains of two persons. The south-west chamber is 5 ft. long and 4 ft. wide, and contained the bones of four persons. The south-east chamber is 5 ft. 6 in. long and 3 ft. 6 in. wide, containing two sets of bones. The central passage is approached by a bell-mouth entrance, and roughly walled on each side, 16 ft. in length. The upright stones forming the central passage and lateral chambers vary from 3 ft. to 6 ft. in height above ground, and are irregular, so as to preclude the supposition that covering-stones were used. None such appeared in opening the cairn. The bones were submitted to Dr. D. Morton Douglas for examination, and such portions as appeared to be of scientific value were retained, and the remainder were placed in terra-cotta vessels and re-interred each in its separate compartment. Such bones as are of interest I have now presented to the Oxford Museum through Professor Rolleston. No flint implements were found in the tumulus, but some fragments of rough, unbaked pottery were discovered.

BORING WITH SMALL TUBES.

In the vicinity of Antwerp much difficulty is experienced in obtaining water, owing to the fact of the ground being entirely a deposit of fine sea-sand, of a blowing nature.

Mr. Huger, the agent of the Great Eastern Railway Company at Antwerp, has been trying to ascertain how deep the bed of sand extended, and has made his first attempt on a very small scale, employing an "Abyssinian" tube well, only 1¼ in. diameter, driven by a "monkey" weighing 75 lb. With this little tube he has been able to reach to no less a depth than 152 ft., testing the soil at short intervals the whole way down, and demonstrating that nothing but sand extends to this depth.

It is now very probable the attempt will be followed upon a large scale.

PRESTON.

Health of the Town.—At the last meeting of the Town Council, on the presentation of a report from the Sanitary Committee, containing the recommendation that notice should be given to the owner of two houses requiring that they should be closed as unfit for human habitation, a discussion took place, in the course of which statements were made as to the health of the town which call for immediate attention. Alderman Satterthwaite, for example, said,—Respecting the mortality, they would see that for the past month it had been 37 per 1,000, and for the month preceding it was 32 per 1,000. If they would look at the ages of the persons who died they would find that the mortallty had been principally among those under two years of age. From two years and upwards the death-rate had not exceeded the average. For this month 205 out of 316 had been under two years of age. The rate under two years of age was 65 per 1,000 for this month, and 60 per 1,000 for the last. During the past five weeks there had been 145 deaths from infantile diarrhœa among children under two years of age. That was a serious matter, and it was rather humiliating that the exertions of the Sanitary Committee had not had a better result. The report was ultimately adopted—so should fresh measures be.

Floor of the Town-hall.—The council were afterwards occupied for a long time in the consideration of a proposition to take up the particularly firm and solid flooring of the hall constructed under the direction of its architect, the late Sir G. G. Scott, and substitute, at a considerable expense, a yielding or "bending" floor more pleasant to dance on. Alderman Hibbert, in opposing the proposition, wisely expressed a hope that the council would inquire, before passing any motion, whether the town-halls at Manchester, Leeds, Bradford, Hull, Bolton, Rochdale, Halifax, Blackburn, and Chorley, had floors constructed upon a "bending" principle. If they could find such, and could procure testimony that such floors answer in general respects, his opposition would fall to the ground. He succeeded in passing as an amendment,—"That the question of altering the construction of the Guildhall floor be referred back to the committee, with an instruction to inquire and report to the council whether there exist any public-hall floors of similar construction to that now proposed."

We learn that the existing floor is constructed as follows:—11 in. by 3 in. single joists, 11 in. apart, with bearings of 13 ft., and resting co-extensively upon the side walls and upon intermediate sleeper walls, which last are carried upon the granite pillars and stone vaulting of the room below. These joists it is proposed to take up and replace to a dancing area extent of 65 ft. by 39 ft., with three beams, 9 in. deep and 1 ft. 1 in. wide, resting upon the walls at each end, having a bearing of 39 ft., and trussed with iron rods; and each beam having under it at two intermediate points of the bearing metal springs or discs, which themselves rest upon the sleeper walls. Upon this yielding basis are to be binding joists, and bridging joists, covered by the present boarding, taken up and replaced. The number of times the hall has been used for balls or dancing assemblies since its erection in 1866 has averaged, we understand, about four or five a year,—the majority private and not public balls. If the council are wise they will let well alone.

PROFESSIONAL REFEREES IN COMPETITIONS.

Sir,—"One who Signed it,"—that is, the memorial to the Institute with reference to Architectural Competitions,—does not treat us quite fairly. He brings forward an instance in which the views of the memorialists were carried out, expresses a very pretty admiration of the successful result, and then proceeds to state that he thinks the memorial will do no good, although he signed it. We are not all of us quite so hopeless. Some of us, and we are glad to have the *Builder* with us, consider the memorial one of the best things done for some time; and are willing to believe that the Institute will not allow the good resolutions to be wasted, but will help every respectable practitioner to be a party to a self-denying ordinance with a view to the general good No reasonable person expects that professional referees will always be perfectly wise, or always able so to deal with conditions conflicting with reason and with each other that no competitor will feel able to grumble if he tries. In the law courts and in arbitrations there are false judgments and glorious uncertainties, but submission to the decisions of unskilled persons has yet to find an advocate. When it becomes the custom to employ the eminent architect who is to act as referee to draw up the conditions, as the memorialists wish that he should, failure of justice will, one hopes, be the rare exception, rather than the rule, as has happened so commonly during the time of haphazard decisions.

If "One who Signed it" has some reasons (beyond a general belief in the awkwardness of human creatures and a despair of things in general) for thinking as he says he does, he will be doing good service by making them known to the signers of the memorial and to the world, in the opinion of

Another who Signed it.

THE EDUCATION OF THE WORKMAN.

Sir,—There is no one who reads the *Builder*,—and who does not?—who will not read "E. G.'s" sensible letter on the above subject with interest. He laments, as others do, the difficulty of getting good general workmen, and yet, if I understand him rightly, he favours specialism, and special schools. Does he not see that this specialisation is one reason why you cannot get the good, old-fashioned, all-round, general workman? "That is not my business," or "That is not my work," is the answer you get from a workman from whom you expect to get general utility. But I fear, sir, there is something lying yet much deeper than this, and "rotten in the state of Denmark." "E. G." almost hits it when he speaks of the want of emulation; but what causes this want of emulation in a nation? It is when *sic vos non vobis* is written on the wall, and men come to believe that if they project any improvement for a master, for a company, for the State, the credit and the reward will be wrested from them either by unscrupulous capital or unscrupulous power. Invent any educational machinery you may, it will not cure this disease; the apathy of the slave sets in, and men will just satisfy the task-master and no more. When a nation has come to this pass of a widespread want of emulation, you may multiply technical institutions as you will without in the slightest degree effecting a cure the nation that ceases to have the spirit of emulation is a nation on the road to ruin. There are, however, more causes than this highway robbery of men's suggestions, ideas, projects, &c., one of which may be the hard and fast rule that men shall not make a profit of their superior ability; but this, too, when analysed, is simply depriving the individual of his advantage, and of the value of his property. The only remedy for the evil would be the prompt restoration of honest freedom, a fair field and no favour. Then we should again have emulation; men would work with a will; the State would be revivified, and we should never again have to lament the want of a man for any good work: we should find for all departments the good general workman.

W. Cave Thomas.

SUBURBAN BUILDING AND THE BUILDING ACTS.

Permit me to enter a protest against a mode of building to some extent prevalent in the suburban districts,—in my view of the matter a reprehensible and vicious mode of construction,—one, however, not provided against by the Building Act, 1855, viz., the banking up of foundations, on the natural level of the soil, by concrete enclosed by planking. If reference is made to the Act of 1844 we find the following as regards foundations, "Depth below Ground," in reference to the depth below the lowest ground or area adjoining:—"The *top* of the footing of every party fence wall, and of every external and party wall, to be at the least 3 in. *below* such surface." It appears to me trenches cut for walls are an essential element in their stability, and I suggest that, to provide proper foundations, the top course should not be less than 12 in. below the natural surface or level of such ground.

The present Act, 1855, simply enacts that "the foundations shall *rest* on the solid ground or upon concrete, or upon other solid substructure."

Why the salutary provision as regards foundations provided by the Act of 1844 should have been expunged, and the present regulation made, is a "*vis difficilis ad explicandum*."

Another defect in building, and one attended with danger, is the late period at which the drains are put in, often when buildings are approaching completion. Before the walls of any building are more than 3 ft. above the ground, it should be compulsory that the drains should be completed.

As regards bad building, on which so much has been written, I cannot conclude without expressing an opinion that no real improvement in these matters will be effected until the legal position of the freeholder or ground landlord is recognised, and he is made jointly responsible with the builder for what is put on the ground through his agency; the legal maxim, *qui facit per alium facit per se*, should be insisted on.

Unscrupulous, careless, or ignorant landlords will always find unscrupulous agents to cover their ground at a minimum of cost. Let the sins of these nefarious proceedings be shared in their due proportions by either delinquent; but for the future the public have only themselves to thank if they allow the real culprit to escape.

R. L. Sibley.

THE GROUPS FOR BLACKFRIARS BRIDGE.

Sir,—Mr. Edmeston's letter is timely, and may be of service to sculptors. That is, supposing the character of the works required and the prizes offered warrant the competition of men of talent. It cannot, however, be disguised that there is a growing disbelief in the honest administration of competitions of the kind proposed. There is a conviction that it is often determined who is to have the commission before the terms of a competition are advertised. If not so flagrant a breach of faith as this, the first appearance of the notice is a signal for the several members of a committee to commence tactical proceedings in favour each of his own *protégé*. The worst work sometimes triumphs. Now, if competitions are really of any advantage to art, they can only be so if carried through with rigorous fairness. The only chance that I see for this would be the appointment of a professional committee of selection, a committee of artists. Painters and sculptors should insist upon this, or refuse to compete.

Observer.

KITCHING'S MEMORIAL READING-ROOMS, MILNTHORPE.

The foundation-stone of this building was laid on the 3rd ult. by Mr. Thompson Bindloss, of Castle Green, near Kendall. The building will be erected as a memorial to the late Mr. John Kitching, M.R.C.S., of Milnthorpe, brother to Mrs. Bindloss. It will be built at the sole expense of Mrs. Bindloss, and will cost over 2,000*l*., and will be supported, when completed, by that lady.

On the ground-floor there will be a coffee-room, 21 ft. by 15 ft.; reading-room, 16 ft. by 15 ft.; with spacious entrance-hall, &c. On the first floor will be a lecture or concert room, 37 ft. by 21 ft., approached by a pitch-pine staircase. On this same floor will be a library, also retiring-rooms, &c.; above will be rooms for chess, bagatelle, and other amusements. The architect is Mr. Eli Cox, Kendal.

PROVINCIAL NEWS.

Altrincham.—On the 1st inst. temporary premises for a Conservative club were opened at Altrincham. A site for a permanent building has been given by the Earl of Stamford and Warrington. The cost of the premises which it is proposed to erect will be about 3,000*l*.

Derby. — The Derby Tramways Company have now completed the Osmaston-road and Friar-gate lines, which have a total length of about two miles and a half. The lines have been laid by Messrs. Mousley & Co., contractors, under the direction of the company's engineer, Mr. Joseph Kincaid, of Great George-street, Westminster, and under the personal superintendence of Mr. Barlow, resident engineer (on behalf of Mr. Kincaid), Mr. Coulthurst, borough surveyor (on behalf of the Corporation), and Mr. A. Johnston, engineer (on behalf of the contractors).

Hull.—At a meeting of the Parks Committee of the Hull Corporation, held on the 1st inst., an informal discussion took place with reference to the desirability of obtaining additional parks for Hull. The chairman said the only property belonging to the Corporation that might be utilised as a park was the Walton-street site. Some time ago they had the offer of the old Botanic Gardens, but it was thought that the position was not suitable, and the cost of the property would be very great. Mr. Downs suggested that the Asylum land might be very well laid out for a park, and it might be made to pay for itself by the building of villa residences around the property. No action was taken.

Lincoln.—On the 1st inst. the new Bishop's "Hostel" at Lincoln,—formerly the old County Hospital,—was opened by the lord bishop of the diocese. The building was purchased of the hospital authorities for 3,800*l*., and the alterations have cost about 3,000*l*. The old board-room and dispensary have been converted into a chapel, and the large waiting-room into a library and reading-room. The males' ward, on the ground-floor, has been made the dining-hall, the upper end being used as a sitting-room for the students, and what was the operation-room is now the servants' hall, while the kitchen, sculleries, &c., remain in almost the same positions as before. There are, on the first floor, a bedroom and sitting-room set apart for the use of the Prebendaries residing out of the city who have preaching turns at the Cathedral. The extreme west wing of the building has been arranged as a private residence for the Vice-Chancellor, Canon Crowfoot. The whole of the floors have been taken out and renewed, likewise the greater part of the ceilings, and the walls have been colour-washed and painted. The alterations have been carried out from plans by Messrs. Goddard & Son, architects; the contract was taken by Messrs. Martin & Sims.

Manchester. — The Manchester meeting of Friends have authorised the committee of the Friends' Hall of Residence to expend a sum of 12,000*l*.,—8,000*l*. of which the meeting itself provides,—in the erection of a permanent and specially-designed hall of residence in place of the temporary premises in Greenheys. The institution was founded in October, 1876, and was mainly due to the presence in lodgings in Manchester of the sons of Friends who had come from distant parts to study at Owens College.——One of the most important improvements which the corporation have recently effected is that which has just been completed at the foot of the approach to London-road railway station. The entrance to

the station from Piccadilly was formerly greatly obstructed by a block of buildings which stood on the east side of that thoroughfare. This has been removed, and the road considerably widened by the construction of a new bridge. The improvement has been carried to Dale-street, where the old bridge has been removed and replaced by one of a much more substantial character, the contract having been carried out by Messrs. R. Neill & Sons, Manchester Together, the improvements will cost about 25,000*l*. The extension of Tib-street from Market-street to Church-street, a work which must (says the *Manchester Courier*) necessarily be protracted in consequence of the terms that have to be arranged with the owners of the property,—is being carried a step further by the demolition of a portion of the warehouse of Messrs. Rylands & Co. (limited). When the improvement is completed the street will have a uniform width, and the Oldham-street traffic will be much relieved.

Newcastle-on-Tyne.—A meeting has been held here to consider proposals for the formation of a technical college. The Mayor (Mr. R. Cail) presided. Dr. Rutherford read a report, giving information respecting the means adopted for the advancement of technical education by the City and Guilds of London Institute, and said that in connexion with the School of Science and Art, students were found for classes in blowpipe analysis, carriage building, tanning leather, and telegraphy, but no student offered himself for examination in carriage building. The results of the examination were exceedingly satisfactory in regard to the students from the Science and Art School, seven national prizes being awarded to them, thus giving it the first place in the kingdom. The Committee, wishing to do their part, appealed to the public of the Northern counties to extend the area of its teaching, so as to cover the whole of its diverse and important industries, to keep the instruction up to the hour, and to provide for the training of teachers. This could only be efficiently done by the establishment of a technical college. It was resolved, "That the Committee of the Science and Art School be and are hereby appointed the Committee (with power to add to their number) to carry out the scheme."

Ramsgate.—In compliance with a request of the Ramsgate smack-owners, the Local Board have decided to erect a building for the purpose of a fish-market. Plans are now being prepared which will be submitted to the Board of Trade for approval. It is expected the building will cost between 600*l*. and 700*l*. It is to be erected near the clock-house, and will be 100 ft. long and 30 ft. wide.

NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION.

The above Association having selected Sunderland as the *locale* of its seventh half-yearly meeting, the gathering took place on Saturday last in the Board-room of the Sunderland Gas Company, Fawcett-street. Mr. J. H. Cox, of Sunderland, president of the Association, presided, and representatives attended from most of the principal towns in the North of England and in Scotland. The President, in the course of his opening address, mentioned the opening of the new gasworks for the Bishop Auckland District Gas Company, the new retort-house and other considerable extensions at the Hendon station of the Sunderland Gas Company; and last, though not least, the commencement of operations at the Jarrow station of the South Shields Gas Company, where might be seen in full operation the improvements in machinery and apparatus for charging and drawing retorts, the invention of Mr. W. J. Warner. He said that, thanks to the scientific labours of Sugg, Bray, and others, improved methods of street illumination were being extensively adopted in crowded thoroughfares in many large towns, and no doubt the success which had already been attained would cause a rapid development of the system.

Several papers were read, and the works of the Sunderland Gas Company at Hendon were inspected.

The Dublin Town Council on Monday last resolved to invite the Social Science Association to hold their Congress in Dublin in 1881, "as they dealt with a great many subjects most interesting to the Corporation in regard to municipal law and sanitary science."

ART EXHIBITIONS.

Birmingham School of Landscape Art.—The annual exhibition of the works of the present and past members of the Birmingham School of Landscape Art was opened on the 4th inst. in the Young Men's Christian Association Rooms, Needless-alley.

Leek.—An art exhibition, got up for the benefit of the Leek Mechanics' Institute Art Classes, was opened on the 4th inst. at the Union Buildings, by the Right Hon. Lord Norton. The collection of oil paintings includes many famous pictures. Foremost amongst these are Mrs. E. Butler's "Balaclava" and "Quatre Bras." There are also exhibited ninety-two water-colour drawings from the South Kensington Museum, illustrative of the rise and progress of the art in England from 1710.

Edinburgh.—A collection of paintings, &c., illustrative of Scottish art, was opened on Wednesday last, in the Royal Scottish Academy Galleries. The exhibition, which will remain open six or eight weeks, has been made in consequence of the visit to Edinburgh of the Association for the Promotion of Social Science. It includes nearly 600 separate works, the larger number being those of living or recently deceased artists.

Hertfordshire.—On Wednesday last, at the Shire-hall, Hertford, Lord Lytton opened the Herts County Fine Arts Exhibition. The loan collection includes many articles of great beauty and antiquity, some of which were collected in India by Lord Lytton. There are water-colour drawings by eminent masters, ancient needlework, bronzes, Indian, Chinese, and Japanese work in gold, silver, ivory, stone, and wood, and ancient tapestry, &c., exhibited by the Marquis of Salisbury, from Hatfield House; Earl Brownlow, Ashridge House; Earl Cowper, Panshanger; and the Earl of Clarendon. Mr. John Evans and Mr. Robert Hanbury also contribute to the collection. In the art department upwards of 200 drawings are exhibited for competition.

Stray Portraits.—A suggestion for an exhibition of portraits of unknown origin has been submitted to the South Kensington Science and Art Department, and the department has promised to give due consideration to what it terms a "useful suggestion." The number of such works scattered throughout the kingdom is enormous, and it is thought that bringing them under public notice would lead to the identification of many historical celebrities.

ACCIDENTS.

Fall of a Bridge in Lancashire.—On the evening of the 1st inst. a bridge which spanned the East Lancashire Railway at Fernhill, Bury, gave way, and a large portion of it fell on and blocked up the lines for about two hours. The bridge connected the foundry of Mr. Alderman James Park, engineer and paper-machine maker, with Fernhill, Bury, and was a wooden structure of a fragile nature, which had existed many years, but for some time past had been noticed to be in a state of decay, and at the time of the accident it was undergoing repair. At noon on the day of the accident a rag engine, weighing about five tons, was taken over the bridge without accident, and at six o'clock in the evening the workmen in the foundry, to the number of about 100, passed over it on leaving work. Forty minutes afterwards the bridge fell. The supposition is that the weight of the rag engine was the real cause of the accident. A train from Ducie Bridge to Bacup had passed under the bridge only five minutes before it fell.

Fall of a Chapel Floor in Manchester.—An inquest was opened on Monday in Manchester by Mr. Smelt on the body of a widow named Catherine Lynch, aged 70, who lost her life by the falling of the floor of St. Aloysius' Roman Catholic Chapel, Ardwick. The congregation were leaving the room after mass on Sunday, when a beam of the floor snapped in the midst, creating a gap of several yards, through which some scores of people were flung on the benches and desks of a schoolroom beneath. A scene of great distress and tumult followed, and Mrs. Lynch died soon after her removal to a neighbouring surgery. It appeared that a pillar supporting the beam had first fallen from its place, owing, it was stated, to wet-rot. The pillar fell some days before the accident, but it was considered that the beam was sufficient of itself to support the floor in that part. A verdict of "Accidental death" was returned. A mechanic named James Kilty is in a dangerous condition, he being 67 years of age, and having both thighs broken.

Bursting of a Water-tank at the Crystal Palace.—On the 1st inst., at half-past one p.m., while water was being pumped into the two large tanks at the Crystal Palace which supply the fountains, with a view to the firework display in the evening, one of the tanks gave way, and an aperture appeared 16 ft. square, through which the water rushed in a flood. Parts of the tank, weighing several hundredweight, were carried to a distance of 250 ft. One of the servants of the company rushed out to see what was the matter, and was carried away by the water to a distance of 200 yards before he could be rescued. The same thing happened to a man who had just left his cart to take a drink of water at the fountain standing in the centre of the Crystal Palace Parade, but both men were rescued from the water without any serious injury. All the trees and shrubs in the neighbourhood of the water-towers were washed up, some of them being carried away, together with about 60 yards of the fence down the Fountain-road, the water running as far as the Sydenham-hill station, a distance of three-quarters of a mile. The fall of the water left a hole in the ground after the downpour had ceased to a depth of 16 ft. Damage was done also to the grounds of neighbouring residents. The two cisterns supplying the Palace and fountains stand on iron pillars and staging, 80 ft. high, beyond the north-west end of the building, and are attached to each other by communicating pipes. Each tank is constructed of cast-iron plates, about ¾ in. in thickness, and each is 48 ft. square, 16 ft. deep, and will contain when full 700 tons of water. The tanks, it is said, had been inspected in due course, and no suspicion seems to have been entertained of their perfect stability until a few minutes before the fracture, when one of the men employed on the spot noticed a perceptible leakage, and hurried off to inform Mr. Carr, the clerk of the works, of the fact. Fortunately for that gentleman he did not happen to be in his office at the moment, or he would in all probability have arrived on the scene just as the tank burst and belched out its entire load of at least 600 tons of water.

St. Gothard Tunnel.—Another accident is reported from the St. Gothard Tunnel. About 150 ft. from the Wattingen, or Göschenen end, upwards of 30 ft. of the roof of masonry, together with an immense mass of loose rock, fell in. Four men, it is believed, were killed.

Fall of a Wall in Dublin.—Dr. Whyte, the Dublin City Coroner, held an inquest on Saturday last on the body of Mrs. Mary Thompson, who was killed by the fall of a wall in Temple-court. The wall formed part of a house which was being demolished by a man named Joseph Lube, who failed, in the opinion of the jury, to take sufficient precautions to protect the lives of passers-by. A verdict of "Accidental Death" was returned.

CHURCH-BUILDING NEWS.

Tywardreath.—The parish church of Tywardreath, near Par Station, Cornwall, was reopened on the 8th ult., after a restoration which, to a great extent, has been a rebuilding, for with the exception of the tower and the arcade, the whole church has now been re-built, a course determined on as necessary in consequence of the dilapidated state of the walls and the dangerous condition of the roofs. The roofs were found to be so defective as to preclude all possibility of restoration, but they have been exactly reproduced. The walls are built of the local stone; the dressings are of Pentewan stone. The tower arch, which has now been opened up, is a good sample of modern masonry, and is of St. Stephen's stone. The masonry in the organ-chamber, and, indeed, most of the internal masonry, is of Pentewan stone. The old oak pulpit has been refixed at the north corner of the chancel step, upon a base of Portland stone. The various avenues are laid with encaustic tiles, supplied by Messrs. Minton, Hollins, & Co. The windows throughout are glazed with tinted and coloured glass, by Messrs. Fouracre & Watson, of Stonehouse. The fine old Perpendicular font has been refixed. It is octagonal in shape, with deep double-membered tracery on every cant. The seating in the nave and aisles is of pitch-pine, open, and with square-headed ends. Eight of the old bench-ends have been preserved, and have been re-used in the transept. They are of massive oak,

traceried, and all bear shields, upon which are curious devices. The stalls are of oak, and of elegant design, richly carved. A new parclose screen divides the chancel from the Rashleigh or south-chancel aisle. This screen is of English oak, about 30 ft. long. Its tracery is very rich, the heads springing between the mullions being cusped and crocketed, and the whole is surmounted by a carved cornice. The carving and tracery-work upon these screens and upon the stalls, including those in the Rashleigh aisle, is by Mr. Harry Hems, of Exeter. The bosses and wall-plates of the roof and the base of the pulpit have been carved by Mr. West, of Plymouth. Mr. Holman, of St. Just, did the iron-work. The church contains several curious monuments, which have been carefully replaced in the walls. The architect under whose superintendence the restoration has been carried out is Mr. Richard Coad, and the contractors were Messrs. Carah & Edwards, of Crowan. The cost has been upwards of 3,000*l*.

Featherstone.—Featherstone church, Pontefract, is now undergoing partial restoration, the south portion of the structure having been in a dangerous state from decay. During the progress of the work, which is entrusted to Mr. Freeman, of Featherstone, many remains of those who fell during the sieges of the castle at Pontefract have been found.

SCHOOL BOARD SCHOOLS.

London.—On the re-assembling of the School Board for London on the 30th ult., after the recess, Sir Charles Reed, the chairman, in the course of a review of the work of the Board during the ten years in which it has now been at work, said,—"At the close of the year 1871, when the voluntary schools had furnished their returns, and our own work had just begun, there was accommodation in all for 262,259 children, or 39·4 per cent. of the estimated population of school age. At Midsummer last the denominational schools had provision for 269,169 children, or 8,000 more than in 1871, while we had provided for 225,236, giving a total accommodation for 494,705 out of a present child-population of 740,577, or 66·8 per cent. Thus, we have now seats for two out of every three children needing elementary education. If we confine our view to the past year, it is seen that the accommodation afforded by the denominational schools has declined 2,884, while ours has increased by 15,008. This latter increase has involved the acceptance of tenders for 24 new schools, accommodating 21,751 children. These schools are planned upon our usual scale, smaller schools being proportionately more expensive. The average cost per head on the tenders of these twenty-four schools last built has been 8*l*. 18s. 5d., which includes the provision of teachers' rooms, schoolkeepers' houses, boundary walls, and, in several cases, extra deep foundations. The buildings, while free from display, are designed to be durable, attractive, and well equipped for their purpose. The Board has now acquired by purchase freehold sites giving a total area of over 151 acres.

Stapleford.—New Board schools at Stapleford, Notts, were opened on the 28th ult. The buildings, which are of red brick with stone dressings, have been erected at a cost of about 3,200*l*., from the plans of Mr. R. C. Sutton, architect, Nottingham, the contractor being Mr. C. Moult, of Stapleford. The school furniture has been supplied by Messrs. J. Wright & Son, of Nottingham, the desks being of the design known as the "Nottingham desk."

Harborne.—The foundation-stone of new Board schools at the junction of Heath-road and York-street, Harborne, was laid on the 28th ult. by Mr. Thomas Griffiths (chairman of the School Board). The building is being erected to accommodate 500 children,—viz., 266 in the larger school and 234 infants. It will be in the Gothic style, and constructed of red brick, and will comprise a large school measuring 63 ft. 3 in. long by 22 ft. wide for boys and girls, with two class-rooms 20 ft. by 20 ft. each; a committee-room of the same dimensions, and a sewing-room for girls 29 ft. 9 in. by 20 ft. The infants' school will be 47 ft. long by 26 ft. wide, with two class-rooms, each 20 ft. by 16 ft. A master's residence will also be erected fronting the Heath-road. The buildings are being carried out by Messrs. Harley & Son, Smethwick, from designs by Messrs. J. R. Sharp & Co., architects to the Board.

Miscellanea.

A Wooden House.—We mentioned some time ago the changes that were being made at Hollingbury Copse, which was in the past the most unkempt and neglected copse, perhaps, in the neighbourhood of Brighton. The London correspondent of the *Dover Standard* has recently given a graphic description of the Copse, &c., at the present time, from which we extract the following:—"I spent Tuesday in a country residence which, I think, would be very interesting to a great many architects. The owner and occupier has been his own architect, and has had built the kind of place he thought he would like, on a site, which, in itself, is a kind of paradise. Indeed, I was reminded of Morris and his opening stanza: 'Folk say a wizard to a Northern King at Christmas-tide such wondrous things did show, that through one window men beheld the spring, and through another saw the summer glow, and through a third the fruited vines arow, while still unheard, but in its wonted way, piped the drear wind of that December day.' Well, this house I am telling you of (if it can be called a house) stands on a hill. From one window you can see the bleak hills stretching out for miles; from another you look on to the Channel; and from a third you look into the green mazes of a beautiful copse with clear water breaking and brawling over stones, and slipping and singing between ferns and the roots of old trees. But what I started to tell you I have not yet mentioned. This residence is entirely built of wood. The floors are wood; the walls are bare polished wood; and the roofs are bare polished wood. And very rich a picture looks on such a wall, and very bright and dainty is a dinner under such a roof. Let me tell you that this residence is built in compartments, or what would be called chapels, the chapels being connected one with another by corridors. There is a dining-room chapel, and breakfast-room chapel, and a tea-room chapel, and a library chapel, a study chapel, &c., and each has its own particular charm of shape or situation."

Sheffield New Corn Exchange Buildings.—On the 30th ult. the roof-rearing supper to the artificers and *employés* at this building was given at the Pheasant Inn, Broad-street, Park. Mr. Charles Hadfield (of the firm of M. E. Hadfield & Son), presided, and 130 persons sat down. We are informed that a similar entertainment took place at Leeds for the workmen engaged at the extensive establishment of Messrs. Tomlinson & Son, the contractors, where the massive oak roof for the building, and the joiners' work, are being executed. In drinking the health of the Duke of Norfolk, Mr. Hadfield remarked that his Grace had taken a practical interest in all the details of the important work in which they were engaged from its commencement. His Grace was a great builder, and as the most liberal patron of the building trade in the United Kingdom he had additional claims upon them. Mr. Tomlinson, jun., proposed the toast of "The Architects, Messrs. M. E. Hadfield & Son," which was duly acknowledged by the chairman, who proposed "The Contractors," remarking on the loyal interest and good conduct displayed by every man connected with the works from the commencement. Mr. Tomlinson, in replying, gave some interesting details of the quantities of materials in the building, remarking that amongst the rest upwards of two-and-a-half millions of bricks, 150 tons of oak timber, and 200,000 Broseley tiles, had been supplied up to the present time. The clerk of the works (Mr. Payne), the foremen, and the workmen, were duly toasted.

Gas Profits in Manchester.—The annual report of the Gas Committee of the Manchester Corporation was issued on the 1st inst. In spite of the bad trade, and a smaller increase in consumption than usual, the net result of the year's working enables them to place at the disposal of the Improvement Committee the sum of 52,000*l*., which represents the net profits, except 1,612*l*., which comes from the reserve fund. The profits of the gas department pay the cost of all the street improvements in Manchester, and several hundred thousand pounds have been received from the Gas Committee for this purpose during recent years.

Art and the State.—The inaugural lecture of the winter session of the Midland Institute, Birmingham, was delivered on Monday evening last by Mrs. Mark Pattison, who took as her subject "The Relations between Art and State created in France by the Policy of Richelieu."

Presentation to an Art-Master.—On the 29th ult. a large number of the students of the Nottingham School of Art and their friends attended at a *soirée* in the institution in Waverley-street, organised for the purpose of presenting to the headmaster, Mr. John S. Rawle, F.S.A. (who, after fourteen years' connexion with the school, is about to leave to take the position of headmaster of the West London School of Art), a testimonial of their appreciation of the ability with which he has conducted the school, and of their personal esteem. The testimonial consisted of two gilt and oxide salvers, with figures and ornaments in bold relief, richly chased and finished, and a vase and stand *en suite*, the whole being fitted into a handsome pollard oak case. These articles were manufactured by Messrs. Elkington, from the designs of Mr. Morel. The testimonial was accompanied by an illuminated and framed address, designed by Mr. G. Staynes, a former student, and executed by various students,—Miss Pitman, Miss Goodyer, and Miss Hopkinson. The four elementary stages of drawing were represented on the address by Mr. Staynes, and Morning, Noon, and Night by Miss Ada E. Fussell. The address spoke in the most cordial terms of Mr. Rawle's fourteen years' labours in Nottingham, and its sentiments were endorsed by Mr. S. Dutton Walker and other gentlemen who spoke on the occasion. The West London School of Art ranks next in size to the central school at South Kensington, having accommodation for 1,000 students.

House Foundations at Hampstead.—At a meeting of the Hampstead Vestry on the 30th ult., upon the consideration of the recommendation of the Works Committee with regard to a road at Kilburn, Mr. Pearse stated that, when the committee went to view the road, he noticed that the floor-joists of some of the houses rested only on four layers of bricks, and there were 6 in. of water in some of the foundations. He considered that this was calculated to produce fever and other illnesses in the houses when inhabited, and he wished to know whether the Vestry had any power to interfere. Mr. C. B. King said that when the drains were put in they would carry off the water. The Chairman said that was a matter for the parish surveyor. Mr. Pearse: That is a myth. The Chairman said he hoped the attention of the parish surveyor would be called to it. To his (Mr. Hackworth's) own knowledge there were many buildings in the parish that were in a very disgraceful state.

Messrs. Robert Boyle & Son, the well-known ventilating and sanitary engineers, of London and Glasgow, show, at the Ecclesiastical Art Exhibition, Leicester (held in connexion with the Church Congress), a large variety of their air-pump ventilators, specially adapted for the ventilation of churches and schools, to which buildings they have been applied extensively and with much success. Messrs. Boyle have made a speciality of the ventilation of such buildings. The merits of the air-pump ventilators have been too often referred to in our columns, and are too well known, to require any further description here just now.

Worcester Diocesan Architectural and Archæological Society.—A large number of the members of this society paid a visit to Coventry on the 24th ult., and under the guidance of Mr. W. G. Fretton, Mr. M. H. Bloxam, and others, the following places of interest were visited:—Remains of Cheylesmore Manor House, Steeple of the Franciscan or Grey Friars' Monastery, Ford's Hospital, St. Mary's Hall, St. Michael's Church, Holy Trinity Church, Free Library, remains of Benedictine Priory and Cathedral, timber houses in Butcher-row, Hospitium, city walls and gates, St. John's Hospital, timber houses in Well-street, Bond's and Bablake Hospitals, St. John's Church, Peeping Tom at the King's Head Hotel, Palace-yard, Knave's Post, White Friars' or Carmelite Monastery, Carthusian Monastery of St. Ann; south walls of city and Cheylesmore Gate, Martyrs' Field, and Park. In the afternoon the party were entertained at luncheon by Mr. W. Odell, Bishop-street.

A Good Contractor.—The general committee of the cathedral of St. Finn Barr, Cork, have presented to Mr. Delany, who has executed the three towers and spires of the cathedral, under Mr. Burges, an illuminated copy of a resolution unanimously passed, expressing their sense of the skill and ability with which he has carried out the contract entrusted to him.

Slates and other Building Materials, North Wales.—The local correspondent of the *Mining Journal* says:—The shipping of slates to the Baltic ports from Portmadoc is now ceasing for the season. Although not equal to some former years, the summer trade, now closing, has been a decided improvement on last year. An inland trade also has grown up for this district, and large numbers of slates are now forwarded by both the Cambrian and London and North-Western Railways. From the port of Carnarvon a better trade has been done likewise, still the trade will not be what it ought to be until the building trade of Scotland,—on which to a considerable extent this port depends,—recovers itself. Quarry-owners are making sacrifices, in order to get rid of their old stocks of small-sized slates, and only yesterday a large number (10 in. by 6 in.) were sold for 5s. per 1,200. Some of the sett quarries, near Portmadoc, are doing but little, but this is hardly, I think, due to slackness of demand. The Moel-y-Gest Quarry is working vigorously, and the quarry is about to be connected with the railway by a new siding. The brick, tile, and stone trades of the Ruabon district follow the fluctuations in the building trade, and they are, therefore, at the present time not so good as they might be. The trade, too, in common bricks is hardly remunerative at present prices. Mr. Mason, of the Trevor Brickworks, has commenced the manufacture of bricks for the lining of iron furnaces, by mixing with the fire-clays of the coal-measures the sandstones which lie at the base of these, and which correspond to the "gannister" beds of the North. A similar attempt was made some years ago by Mr. Edwards, of Trevor, but for some reason or other the manufacture was discontinued.

A Big Blast of Granite.—The granite quarry of Messrs. William Sim & Co., at Furnace, has been visited by the magistrates and members of the town council of Glasgow for the purpose of witnessing a big blast which it had been arranged should take place immediately on the steamer arriving at a safe position opposite the quarry. The attention of the passengers was directed to a black mark on the eastern side of the quarry face, a considerable height above the quarry floor. This was the mouth of the mine which led to the chambers charged with the gunpowder. The mine penetrated to a distance of 50 ft., where a shaft was sunk to a depth of 50 ft. At the foot of the shaft there were branching mines. One went in a direction towards Loch Fyne to the extent of 16 ft., including the formation of a chamber excavated to contain 5,000 lb. of gunpowder. Another passed in a northerly direction to a considerable distance, at the end of which was a chamber for 3,500 lb. of gunpowder. The chambers were communicated with by means of electric wires, and immediately on the signal to "fire,"—the blowing of the whistle,—being given from the steamer, there was a tremendous upheaval of a large portion of the mountain side. The lines of displacement were calculated to be equal to about 18,000 cubic yards, or 37,000 tons of material. The blast was entirely successful.

The Stockwell Orphanages.—On the 4th inst., Mr. George Palmer, M.P., laid the foundation-stone of a "Reading House," and the Rev. H. Stowell Brown laid that of a "Liverpool House," as additions to the "Houses" erected on the grounds of the Stockwell Orphanages, in the Clapham-road, founded by the Rev. C. H. Spurgeon and his congregation at the Tabernacle. Mr. James Spurgeon stated that the erection of the buildings would cost 11,000*l.*, of which 7,000*l.* had been subscribed, and 3,000*l.* more promised.

Liverpool Art Club.—In connexion with the above club, it is announced that the opening of the embroidery competition is postponed to the 15th of November. Mr. P. H. Rathbone has promised to deliver an address on the present exhibition of Italian photographs, on Oct. 25th. An exhibition of caricatures will be opened on December 20th, and an exhibition of paintings, drawings, sketches, and designs by amateurs on January 20th.

The Melbourne International Exhibition was opened on the 1st inst. with very promising auguries. We gave a view of the building in our volume for 1878, p. 1305. Messrs. Reed & Barnes are the architects.

Company of Turners' Competition.—The works sent in will be exhibited at the Mansion House, London, on the 12th and 13th inst. The prizes will be presented by the Lord Mayor on the 14th.

The Photographic Society of Great Britain opened their annual exhibition on the 2nd inst., in the Gallery of the Society of Painters in Water-colours, Pall-mall East. It contains a great deal worth seeing. Some landscapes by the School of Military Engineering, and others by Dr. Huggins, Mr. F. A. Bridge, and Mr. E. Gould, all printed in the platinum process, show that this is a method which is gaining ground; it gives the appearance somewhat of a good pencil drawing, besides being quite indestructible. We observe that there is now a Platinotype Company. In the important application of photography to copying famous pictures of large size, the Berlin Photographic Company contribute a silver print of the same size as the picture of the Madonna di San Sisto in the Dresden Gallery. This fine copy was taken in nine separate plates, each about 36 in. by 24 in., and with perfect success. Some landscapes by Mr. W. Harvey Barton, which include water, are very remarkable; Nos. 41 and 42, for examples. No. 201, "In Maiden Meditation Fancy Free," by Mr. H. P. Robinson, has rightly received a medal.

Saving in Parish Work.—At the meeting of the Camberwell Vestry on the 29th ult., the Sanitary committee recommended that they be empowered to negotiate for and purchase, or, if deemed best, to take on lease or otherwise, a depôt for the deposit of the dust. Mr. Lassam, in moving the adoption of the report, said that Mr. Reddin's tender for 1876-77 amounted to 3,400*l.* This was not accepted, the vestry deciding to do the work themselves. The work was done by the vestry at a cost of about 2,400*l.*, making a net saving of 1,000*l.* In 1878-79 the cost was under 2,000*l.*, or about 2s. 6d. per load, as against 5s. 6d. under the old contracting system. In 1879-80, the net cost of collection amounted to 2,060*l.* 16s. 3d., or about 2s. 6d. per load, showing a total saving of 2,000*l.* The motion was carried.

Over Darwen Market House.—The foundation-stone of the above was laid on Saturday, October 2nd, by the Mayor, Mr. Alderman Snape, J.P., in the presence of a numerous company. The stone was of Shap-granite, with an inscription in gilt letters. A chased silver-gilt trowel was presented to the Mayor by the corporation. The works are well in hand, the difficulty attending the diversion and covering in of the river, which runs under the market, having been overcome. The architect is Mr. Charles Bell, of London, and the contractors are Messrs. Orrell & Sons, of Darwen. The Clerk of Works is Mr. Hobson-Haigh.

The Sunday Society.—This organisation intends to be very active during the coming winter. It will be represented at the Social Science Congress, and a paper will be read on its behalf by the Rev. Robert B. Drummond, entitled "Sunday Reform." During the sitting of the congress a public conference will be held in Edinburgh in support of the opening of museums on Sundays; and on October 25th Professor Tyndall will preside over a public meeting in the largest hall in Glasgow in support of the objects of the Society.

Fire at the Louvre, Paris.—On the evening of the 2nd inst. a fire broke out in the Pavillon de Flore, the western extremity of the Louvre buildings, the apartments temporarily occupied by M. Hérold, the Prefect of the Seine. The fire was fortunately confined to the apartment and the story on which it is situated. The event has caused an outcry in Paris against having inhabited dwellings alongside the galleries of the Louvre, where no lights are allowed at all.

Lectures on Architecture.—The directors of the Edinburgh Philosophical Institution have arranged a course of lectures for the ensuing session. The programme includes an exposition of the "Principles of Design in Architecture and Ornament," by Mr. H. H. Statham.

A Statue to Jean Cousin, the painter and sculptor of the sixteenth century, was inaugurated last week, at Sens. M. Turquet, Minister for Fine Arts, presided, and most of the leading artists of France were present.

The Fitzalan Chapel at Arundel.—Complaints are made by visitors that the permission, recently conceded by the Duke of Norfolk, to visit this chapel two days a week, has been withdrawn.

The Princess's Theatre, Oxford-street.—The work of reconstructing this theatre is now so far advanced that it is confidently expected that the house will be ready for opening about the end of the present month.

Christ Church Sunday-school, Cockermouth.—A Sunday-school is about to be erected in connexion with Christ Church, Cockermouth, Cumberland, the Rev. John Green, M.A., vicar. The building will be of white freestone, from Talantire quarry, in the immediate neighbourhood. The roof will be covered with Buttermere slates, with red-tile cresting and terminals. The interior woodwork will be of pitch-pine, varnished, the roof being open-timbered. The architect is Mr. W. C. Jennings, of Cockermouth.

A New Industry.—A new invention has been introduced into the Cleveland district, viz., the manufacture of paint from steel scale for the protection of iron and steel from corrosion.

TENDERS

For three cottages, with cowhouse, stable, &c., at Old Basford. Mr. Herbert Walker, architect. Quantities by the architect:—

Newham, Old Basford	£1,248 11 0
Jew & Hickling, Arnold	1,024 0 0
Cargill, New Basford	1,010 0 0
Hind, Nottingham	995 0 0
Mason, Old Basford	995 0 0
Mason & Pratt, Nottingham	993 0 0
Ellis, Nottingham	958 0 0
Musson, Carrington	940 0 0
Raven, New Basford	927 0 0
Wayte, Arnold	918 0 0
Ingham, Old Basford	891 0 0
Bains & Turton, Old Basford	870 0 0
Scott, Nottingham	868 12 0
Wheatley & Maule, Nottingham	859 0 0
Judd & Cooper, Hyson-green	846 0 0
Stainforth, Bulwell	838 0 0
Price & Hooton, Nottingham	799 10 0
Musson, Hucknall	790 0 0
McCulloch, Bulwell (accepted)	769 0 0

For the erection of a house and sale-shop at Old Basford. Mr. Herbert Walker, architect. Quantities by the architect:—

Richer, Hucknall	£609 10 0
Mason & Pratt, Nottingham	570 0 0
Ellis, Nottingham	515 0 0
Stainforth, Bulwell	514 0 0
Holdsworth, Hucknall	511 0 0
Judd & Cooper, Hyson-green	497 0 0
Cargill, New Basford	495 0 0
Jew & Hickling, Arnold	487 0 0
Musson, Carrington	484 0 0
McCulloch, Bulwell	480 0 0
Mason, Old Basford	471 0 0
Wheatley & Maule, Nottingham	468 0 0
Ingham, Old Basford	465 0 0
Raven, New Basford	463 9 0
Scott, Nottingham	460 0 0
Price & Hooton, Nottingham	449 0 0
Newham, Old Basford	445 8 0
Bains & Turton, Old Basford*	444 0 0

* Accepted.

For the erection of four houses at Bognor, Sussex, for the Bognor Hotel and Residences Company, Limited. Mr. G. Gard Pye, architect. Quantities by Mr. C. Stanger:—

French, Lisson-grove	£5,425 0 0
Nicho's, Brockley, S.E.	4,976 0 0
Lissaman, Leamington	4,813 13 4
Eunor, Julian, & Co., St. George's-road, S.E.	4,677 0 0
Longley & Worth	4,599 0 0
Smith, Bognor	4,540 0 0
Everett & Son, Colchester	4,499 0 0
Huey, Parkstone	4,376 0 0
Garrod, Spitalfields	4,083 0 0
Bull, Chelsea	3,995 0 0
Cooper, Slindon-common	3,559 0 0
Vaughan, Acton	3,438 0 0
Lacy, Westminster	3,300 0 0

For the erection of lodge, stables, and cow-house buildings, Edgware. Mr. James Geo. Buckle, architect. Quantities by Mr. Chas. L. Cadney:—

French	£2,295 0 0
Haines	2,195 0 0
Childs	2,169 0 0
Sawyer	2,136 0 0
Doune	2,125 0 0
Holloway	2,050 0 0
Parker	2,000 0 0
Hussey	1,956 0 0
Augood	1,890 0 0
R. & E. Evans	1,890 0 0
Beale, Battersea (accepted)	1,650 0 0

For the erection of new infirmary and dispensary, Worthing. Mr. W. Oldham Chambers, architect. Quantities supplied:—

Nurcombe, Hove	£4,031 0 0
Card & Son, Lewes	3,959 0 0
Braid & Co., Chelsea	3,959 0 0
Stevens & Bastow, Bristol	3,799 0 0
Sawyer, London	3,786 0 0
Snewin & Son, Worthing	3,750 0 0
Croak, Southampton	3,747 0 0
Hide & Co., Worthing	3,736 0 0
Blaker, Worthing	3,736 0 0
Woolgar & Son, Horsham	3,716 0 0
Carter, Worthing	3,640 0 0
Longley, Worthing	3,550 0 0
Snewin, Littlehampton	3,508 0 0
Terry, Storrington	3,418 0 0
Morris, East Grinstead	3,412 0 0
Claridge, Banbury	3,350 0 0
Hobern, London	3,255 0 0
Beale, Battersea	3,175 0 0
Bull Bros., Chelsea	3,099 0 0
Peters & Redford, Horsham*	2,997 0 0

* Accepted.

For house at Hayes, Bromley, Kent, for Mr. S. A. Day Mr. W. Berriman & Son, architects:—

Croaker	£1,200 0 0
G. & S. Fisher (accepted)	1,125 0 0

For the Wragg Museum, Free Library, and School of Science and Art, with terra-cotta front, for the Corporation of the Borough of Stafford. Mr. J. B. McCallum, borough surveyor. Quantities by Mr. C. R. Dalgleish, of Stafford:—

Espley	£1,945	0	0
Adams & Pemberton	1,894	0	0
Reynolds	1,881	0	0
Whittome	1,838	0	0
Bridgett	1,810	10	0
Tracey	1,797	0	0
Gee (accepted)	1,775	0	0

For house for Mr. W. Booker, of Redhill, Surrey. Mr. H. Booker, architect:—

Bucklands (accepted)	£349	0	0

For two houses, for Messrs. Needham & Jarrett, Redhill, Surrey. Mr. H. Booker, architect:—

Burton (accepted)	£415	0	0

For re-building Nos. 128 and 129, Aldersgate-street, for Messrs. W. H. & L. Collingridge. Mr. John Collier, architect:—

Hall, Beddall, & Co.	£11,553	0	0
Patman & Fotheringham	10,957	0	0
Williams	10,870	0	0
Wall	10,700	0	0
Holland & Hannen	10,297	0	0
Lawrence	9,994	0	0
Brass	9,973	0	0
Morter	9,927	0	0
Crabb (clerical error)	8,990	0	0

For the erection of an infants' school in the parish of St. Peter's-in-Eastgate, Lincoln. Messrs. Watkins & Scorer, architects. Quantities supplied:—

Martin & Sims	£881	0	0
Harrison & Horton	787	0	0
H. & D. Taylor	770	0	0
Chambers	764	0	0
Cox & Horton	760	0	0
Millson	735	0	0
Pykett	730	0	0
Swaby	725	0	0
Close & Co.	724	0	0
Crosby & Sons	699	0	0
Slingsby	690	0	0
Kendall	689	0	0
Cowen & Lansdowne	666	0	0

For district church, New Swindon, Wiltshire. Mr. Ferrey, architect:—

Hill & Higgs, London	£4,740	0	0
Jarrett, Croydon	4,200	0	0
Wall & Hook, Brimscombe	3,950	0	0
Boyce, London	3,853	0	0
Barrett, Swindon	3,646	0	0
Franklin, Deddington, Oxon	3,642	0	0
Wiltshire, Swindon	3,598	0	0
Estcourt, Gloucester	3,564	0	0
Jones, Gloucester (accepted)	3,480	0	0

For new lecture-room and approaches, to Heath-street Chapel, Hampstead. Mr. W. A Dixon, architect:—

Manley	£1,721	0	0
Burford	1,696	4	3
King	1,634	0	0
Steed Bros.	1,629	0	0
Staines & Son	1,576	0	0
Russell & Cowley	1,480	0	0
Allen	1,479	10	0

For additions, &c., to printing-offices, May's-buildings, St. Martin's-lane. Messrs. Chadwick & Son, architects:—

Kirk & Randall	£1,689	0	0
Laing & Son	1,538	0	0
Patrick & Son	1,448	0	0
Rider & Son	1,448	0	0
Lawrence	1,423	0	0
McLachlan & Sons	1,289	0	0

For house and shop, Pond-lane, Clapton Park, for Mr. G. H. Mitchell. Mr. Frederick Wallen, architect. No quantities:—

Dearsley	£700	0	0
Jarvis	698	0	0
Hantley	657	0	0
Steel & Son	649	0	0
Julia	640	0	0
Jones	600	0	0
Parish (accepted)	590	0	0

For alterations at No. 324, Walworth-road, for Mr. Gabriel. Mr. G. Treacher, architect:—

Kirk	£877	0	0
Gill	877	0	0
Newstead	875	0	0
G. & S. Fisher	859	0	0
Simpson	760	0	0

For altering and adapting premises in Rupert-street, Bristol, for printing and publishing offices, for Messrs. J. Wright & Co. Mr. Herbert J. Jones, architect:—

Saville (accepted)	£516	0	0
For new Concrete Floor.			
Williams (accepted)	£73	0	0

For alterations at No. 17, Small-street, Bristol, for Messrs. R. B. Lavery & Co. Mr. Herbert J. Jones, architect:—

Saville	£434	0	0
Johnson	390	0	0
Krauss (accepted)	380	0	0

For alterations at No. 12, Bridge-street, Bristol, for Messrs. Wm. Summers & Co. Mr. Herbert J. Jones, architect:—

Eastabrook & Sons	£910	0	0
Humphreys	888	0	0
Passco	804	0	0
Conlin & Son	779	0	0
Beaven	740	0	0
Krauss (accepted)	720	0	0

For alterations and additions to Fern Villa, Anerley-road, for Messrs. Edie Bros. Mr. Joseph S. Moye, architect:—

Saala	£867	0	0
Marr	720	0	0
Fox	695	0	0
Hollidge & Stuart (accepted)	687	0	0

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Cornwallis (the water companies, as a rule, do not base their charges on *any parochial assessments*. It is made on the annual letting value of the house, and the percentage is regulated by their separate Acts of Parliament. In one company within our knowledge 4 per cent. on the rental is the maximum, while in another it is 7 per cent.; and these only provide for water to be used for domestic purposes and on the ground-floor. There is an increased charge for high service. All baths are extra, and so are all water-closets that are more than 10 ft. above the level of the street paving, lavatories, housemaids' sinks, &c. These may be reckoned on the fixed scale (the 4 per cent.) at from 6s. to 8s. a tap; and the others, of course, in proportion. We know nothing specially of the New River Company.)—A. H. (the objection in question to the subway system was raised long ago but is not maintainable)—Vestry (the cistern for drinking-water should be disconnected from the water-closet works)—M. F. H. C. (next week)—D. R. (next week)—M. (received)—J. E.—J. S. M.—W. C. J.—M. & S.—W. C. T.—S. & S.—G. & S. F.—H. R.—L. & S.—J. M. J.—S. W. H.—G. W.—D. W.—H. B. & B.—M. W.—E. W.—A. H.—D. & L.—A. L.—G. G. P.—E. K.—T. R. S.—W. D. S. M.—H. J. J.—W. O. C.—C. R. D.—H. B.—J. B.—T. E. P.—Practical Sanitarian.

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